



Walking the Walk

Controlling Arms in the 1990s

Summary of the Fifth Annual International Conference on Controlling Arms
Defense Special Weapons Agency
United States Department of Defense
146 June 1996

19970127 085

Jonah E. Kaphan and Richard C. Solt, Editors

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PREFACE

Walking the Walk: Controlling Arms in the 1990s, is a summary of the Defense Nuclear Agency's Fifth Annual International Conference on Controlling Arms. The conference was organized to provide a multinational forum on topics that constitute the policies, technologies, and operations of arms control, threat reduction, proliferation prevention, and counterterrorism. The 1996 gathering was held at the Marriot Waterside Hotel and Convention Center in Norfolk, Virginia from 3 to 6 June. On 26 June the Defense Nuclear Agency was redesignated the Defense Special Weapons Agency.

The report is a summary of the conference sessions. The speech by the Honorable John M. Deutch, Director of Central Intelligence, is presented verbatim as transcribed. The views presented are those of the conference participants and do not represent those of the Defense Special Weapons Agency, the Department of Defense, Science Applications International Corporation (SAIC), or the Center for Verification Research.

Jonah E. Kaplan and Richard S. Soll of the Center for Verification Research/SAIC edited this report. The rapporteurs were Dru Byrom, Rita DiCasagrande, William P. Haas, Jessica Kaplan, Jonah E. Kaplan, Sheetal Patel, Anne Shukis, and Nicole A. Verna. The editors thank David R. Wilton for his editorial support.

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OVERVIEW

WALKING THE WALK: CONTROLLING ARMS IN THE 1990s

For four decades, the deep freeze in relations between East and West limited the scope and potential of arms control. Negotiations for controlling arms during this Cold War occurred infrequently, and the diminished goals and limited results reflected the overall distrust between the superpowers. One could talk about a worldwide comprehensive test ban of nuclear weapons, one could even talk about dismantlement and reduction of weapons of mass destruction, but talk was about as far as one could go because the circumstances of the international system—in particular, the requirements for maintaining a strategy and posture based on maximum deterrence—rendered implementation of such talk untenable, if not foolhardy.

Now that the Cold War has ended, and along with it the virtual obsession with high levels of armaments, arms control has received a mighty boost. International leaders are looking to the arms control community to reap the benefits of peace between East and West and to ensure the continuation of this peace while stemming an increasingly serious threat: the proliferation of weapons of mass destruction (WMD) to and from potentially troublesome countries. This renewed focus on arms control begs the question asked by members of the arms control community and by the organizers of the Defense Nuclear Agency conference summarized in this document: "We've talked the talk, but can we walk the walk?" In other words, can we fulfill the promises made during negotiations with the means for implementing them? This is the central question confronting the arms control community today as the great hopefulness augured by the end of

the Cold War has given way to post-Cold War realities. These realities include:

- the large number of players involved in controlling arms and the large number of arrangements, compared to the bilateral Cold War arrangements in which there were fewer players and fewer regimes,
- the growing attainability of weapons of mass destruction, especially of chemical and biological weapons, by less developed countries and subnational groups,
- asymmetries between parties in capabilities, requirements, and expectations for both WMD and economic development (e. g., nuclear "haves" versus nuclear "have-nots," economic "haves" versus economic "have-nots"),
- threats which are less clearly defined than in the past (when the prospects of a U.S.-Soviet Armageddon ruled the day),
- uncertain shifts in alliances, perspectives, and attitudes, as well as lingering distrust between nations,
- uncertain domestic political factors within key parties to an agreement (such as internal political wrangling, competing resource demands, insufficient coordination among the policy, technical, and operational communities, and tensions between arms control and military requirements), and
- the need for more resources, technical hardware, and personnel to implement, monitor, and comply in perpetuity with an increasing number of agreements at a time when financial and political support are far from certain.

Held in Norfolk, Virginia, this fifth in a series of annual International Conferences on Controlling Arms sponsored by the Defense Nuclear Agency (DNA) occurred at a particularly auspicious time: three weeks later, the Defense Nuclear Agency was redesignated the Defense Special Weapons Agency (DSWA) to reflect its expanded charter under a 1995 Department of Defense directive resulting from two congressionally mandated studies of the Agency's roles and functions. The special weapons in the Agency's new name include—in addition to nuclear—chemical, biological, and advanced conventional weapons, and their delivery systems.

Accordingly, DSWA manages and conducts research and development of technologies to enable U.S. government implementation, compliance, and verification of treaties, agreements, and initiatives for controlling arms. This includes, in addition to arms control regimes such as the Strategic Arms Reduction Treaties (START) and the Chemical Weapons Convention, U.S. efforts to prevent and respond to proliferation of special weapons and to protect against the consequences of their use, as well as implementation of the Cooperative Threat Reduction (CTR) Program to assist the former Soviet states in removing the most dangerous WMD-related remnants of the Cold War.

In taking the pulse of international arms control, the conference revealed a sense of pride combined with a sense of uncertainty over the future: Pride, because so much has been accomplished in recent years; uncertainty, because the promise of controlling arms might be hindered or derailed by a host of conditions, many of them enumerated above, that have emerged or have increased in importance during the past few years. The juxtaposition of accomplishments and

uncertainties, along with the opportunities and challenges, was a major theme raised in the keynote address by Major General Gary L. Curtin, USAF, the Director of DNA/DSWA. General Curtin called on conference participants to identify and offer alternative political, technical, and operational solutions to assist policymakers, technology developers, and end-users in the implementation process.

These discussions of options available to the policy, technical, and user communities and the perceived fragility of arms control after the end of the Cold War occurred during the plenary sessions, which provided a conceptual architecture for the overall conference. These plenary sessions were designed to enable those in the arms control community to "walk the walk" amidst the new world disorder. The first plenary session addressed the question of organizational reform of the U.S. arms control bureaucracy, given increased burdens placed on the arms control community in planning and implementing a variety of new international initiatives. The panelists provided a synopsis of the current organizational structure and offered options on improving the bureaucracy. Some of the suggestions proved to be quite provocative, such as the recommendation for a nonproliferation arms control tsar.

The second plenary session focused on the implementation of a single arms control regime, the Comprehensive Test Ban Treaty (CTBT), as a microcosm of the issues and challenges facing all regimes. The CTBT embodies all of the elements for an informative and stimulating arms control discussion: controversy between nuclear "haves" and "have-nots" and even among some "haves"; linkage with other regimes (e.g., Nuclear Non-Proliferation Treaty, START); tension between arms control and the maintenance of a defense capability (in this case, a reliable stock-

pile); an array of technical issues related to compliance monitoring and verification; and a myriad of technical, military, environmental, political, and economic issues.

The roundtable discussion that closed the conference encouraged attendees to confront their anxieties and disaffection resulting from today's expanded arms control priorities and approaches. Despite recent successes in arms control such as the indefinite extension of the Nuclear Non-Proliferation Treaty and the denuclearization of Kazakhstan and Ukraine, there is an uneasy mood pervading the arms control community culminating in a perception of fragility. This perception stems partly from a form of cognitive dissonance, generated by the sudden shift from a bipolar world order to a multipolar world, with attendant difficulties for individuals in making the required shift in perspective. The discussion of this uncertainty, or jitteriness, about the prospects for controlling arms showed, however, a sophisticated understanding of where arms control sits at the current crossroads and what should be done to enhance its role as an instrument of international affairs. This hinted that the fragility is probably more apparent than real.

The remaining six panels explored specific sets of issues and problems, but always kept a trained eye on implementation and verification of negotiated agreements. Panel 1, organized and managed under the auspices of the U.S. On-Site Inspection Agency, gave voice to the inspectors who comprise the front line of arms control implementation and the challenges they face in monitoring and inspecting arms control and proliferation prevention regimes.

Panels 2, 3, and 5 explored the challenges in export control and regional arms control efforts in the Middle East, the for-

mer Soviet Union, and the Far East. Panel 4 outlined the burdens placed on the technology-development community in devising and using information retrieval tools for verification and implementation of arms control arrangements, and offered concrete illustrations on how information management facilitates the verification process.

Panel 6 described the role military strategy and the use of force can play in implementing a policy for controlling arms, particularly in countering a proliferant's planned or actual use of WMD, and the role of active defenses in deterring or protecting against such use. This last panel included a comparison of U.S. and Russian perspectives on proliferation, its impact, and potential remedies, and offered some startling insights into the differences between the respective countries' views, differences which will have major implications for U.S. security policy in the coming years.

In addition to the sessions noted above and summarized throughout the remainder of this report, the conference included speeches by leading U.S. and Russian practitioners of policies for controlling arms. The featured speech was by the Honorable John M. Deutch, Director of Central Intelligence, who offered a perspective on arms control as viewed from the U.S. intelligence community. Although intelligence and arms control have always been intertwined, this relationship has become even closer in the post-Cold War era, given the proliferation of threats and the uncertainties concerning players, capabilities, and intentions. Most governments, U.S. and foreign, are faced with similar challenges in adapting to new conditions. Dr. Deutch presented these challenges and enabled conference attendees to exchange views and insights on the role the intelligence community will play in the future of arms control. A

transcription of Dr. Deutch's speech is provided in this report.

Russian and U.S. cooperation in missile and nuclear warhead dismantlement—especially the impact of U.S. assistance under the CTR Program—was discussed by the Honorable Harold P. Smith, Jr. (Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense Programs) and Colonel General Evgeniy P. Maslin (Head of the Nuclear Weapons Directorate of the Russian Ministry of Defense). The thrust of their presentations is that the CTR effort is making a large difference in accelerating Russian implementation of the START I treaty and in removing the bottlenecks that have slowed Russia's own nuclear warhead elimination program.

The conference summarized in this report was a four-day forum for members of the policy, technical, and operational communities from the United States, Western Europe, Russia, Ukraine, the Far East, the Middle East, Canada, and international organizations. These participants represented the policymaking, scientific, military, intelligence, and business segments of their respective countries and organizations.

The next, or sixth, in this series of conferences—to be held from 2 to 5 June 1997, again in Norfolk, Virginia—will be the first DSWA (as contrasted with DNA) International Conference on Controlling Arms. Because the roles and functions of the conferences in this series and of the agency as a whole have evolved together, the name change will not create any discernible changes in the content of the 1997 or future conferences. Rather, the conferences have come to encompass the full range of activities connected with controlling arms within the scope of the sponsoring agency, whether called DNA or DSWA, such as treaty compliance and

implementation, proliferation prevention and response (and closely related aspects of counterterrorism), and threat reduction, and they will continue to embrace this spectrum of issues and activities.

The richness of the discussions portrayed in this report reflects the variety of backgrounds, affiliations, loyalties, and areas of expertise of the participants. The editors have attempted to capture the diversity of views and perspectives while, at the same time, maintaining coherency and focus in the arguments. In the final analysis, this report stands as testimony to both the complexity and difficulty of the task of controlling arms, when considered in all of its manifestations and ramifications, and, more importantly, as testimony to the tremendous strides that have been accomplished since the beginning of the present decade.

PLENARY SESSION I:

INTERCHANGE BETWEEN THE TECHNOLOGY & POLICY COMMUNITIES: HOW HAVE WE DONE? WHERE CAN WE DO BETTER?

Chair:

Ms. Joan B. Rohlifing
Department of Energy

Dr. Robert B. Barker
Lawrence Livermore National Laboratory

Mr. Bruce W. MacDonald
White House Office of Science and
Technology Policy

Rear Admiral Thomas R. Fox, USN (Ret.)
Pacific Northwest National Laboratory

Dr. Amy Sands
Monterey Institute for International
Studies

The organizational structure of the U.S. arms control community can be understood as a three-legged stool of (1) policymakers, (2) technology developers, and (3) user groups. Policymakers provide the vision, developers provide the technical wherewithal, and user groups—the military and intelligence communities—implement and verify the policy by using the technology. Remove any of these groups, or legs, and the stool collapses. This opening session of the conference provided a scorecard of the arms control community and offered ways to readjust and refine the organizational relationships and structure of the policy-technical-operational triad in order to improve the process and content of controlling arms.

The panel focused mainly on the problem of decentralization and how the bureaucracy might be better organized. There were no overarching solutions offered, save one: create a "tsar" to oversee arms control activities in all spheres of U.S. government arms control activity. Those who favored this solution said that it would streamline the bureaucracy; those opposed said that a tsar would ac-

complish nothing, or, even worse, would antagonize relations between the communities as each one vied for the attention of the tsar. Critics of the concept recommended improving communication channels while leaving the overall system intact, because differences between the communities are irreconcilable. Each community operates with different imperatives and with different time-scales, and no tsar, no matter how strong, can overcome this inherent dissonance.

Evolution of the Arms Control Paradigm and Technology/Policy Interaction

The arms control paradigm has remained unchanged in the past fifty years. Before World War II, arms accords were for the most part gentlemen's agreements in which signatories pledged to abide by provisions without very intrusive monitoring and verification procedures. Implementation was simple because it largely relied upon the politics of the situation to ensure success. The "Baruch Plan," which was proposed shortly after World War II, ushered in the current arms control paradigm. It introduced the concept of an in-

ternational authority to implement ongoing aspects of an arms control agreement, and it also changed "trust" to "verify" by proposing an international authority with power to license, control, manage, and inspect, by providing for production termination, weapon destruction, data sharing, and sanctions.

With the exception of the addition of National Technical Means (NTM), arms control never changed the basic verification structure as promulgated under the Baruch Plan. From that point forward, various combinations and permutations of (1) on-site inspections, (2) monitoring, (3) cooperative measures, (4) NTM, and (5) a regulation or control body have been used to detect instances of undeclared activity, deter cheating, and build confidence.

In the 1980s, arms control agreements that were more intrusive became possible as the Cold War began to wane. With the introduction of the Intermediate-Range Nuclear Forces (INF) Treaty, Conventional Forces in Europe (CFE) Treaty, and Strategic Arms Reduction Treaty (START), the move from monitoring large fixed systems to verifying the destruction of smaller, mobile weapon systems and monitoring the deployment of mobile intercontinental ballistic missiles highlighted the need to augment verification regimes beyond reliance on NTM. On-site inspection and cooperative means have become integral to verification. Agreements such as the Chemical Weapons Convention (CWC), Biological Weapons Conventions (BWC), Fissile Material Cut-off Treaty (FMCT), Comprehensive Test Ban Treaty (CTBT), and START II move monitoring away from the relatively simple counting scenarios adopted for large fixed systems to dealing with dual-use technologies and multifaceted industrial processes.

Today's broad-based multinational agreements face at least four additional complications that bilateral arrangements during the Cold War never had to consider. As the technology base of the participants is radically disparate, multilateral arms control arrangements (1) cannot rely exclusively on NTM or on the advanced technological capabilities of institutional multilateral verification; (2) will rely more on transparency arrangements and a panoply of political pressures; (3) must incorporate the widely varied strategic views, positions, and needs of the participants; and (4) must ensure that the expanding verification capabilities keep pace with the technologies of evasion through an appropriate combination of mechanisms listed above (such as on-site inspections, monitoring, and cooperative measures) that do not undermine political will despite their inherent intrusiveness. Multilateral verification regimes, therefore, must be prepared to respond to a host of different noncompliance scenarios, reflecting widely varying incentives, abilities, and needs of the participants.

Evaluation of Group Interaction

The arms control verification paradigm has remained intact, but technology and policy have become intertwined in the effective implementation of arms control agreements. Interaction between technology developers, policymakers, and user groups, however, is not as good as required and needs improvement.

Some panelists said that the situation would be improved if policymakers gave technology developers more money and time to devise verification systems. Panelists cited the CTBT as an example where both money and time provided the opportunity to establish strong communication links between groups. In the United States, the Department of Defense (DoD) and the Department of Energy provided

the resources for CTBT research such as took place in the Advanced Research Projects Agency in the DoD. In Europe, the Conference of Exports in Geneva held numerous discussions which helped facilitate dialogue and strengthen the treaty. Budgets reflect priorities, added one panelist, and budget cuts in research and development (R&D) in the public and private sectors demonstrate the inattentiveness of policymakers. The demise of the Office of Technology Assessment in Congress—which provided a useful forum on arms control issues—is another example. Other panelists added that qualifications for funding from the policymakers emphasize short-term returns over longer-term.

Panelists noted the existence of additional factors that can distort open and honest communication. Both policymakers and technology developers occasionally engage in *ad hominem* quarrels. Policymakers will occasionally bristle when developers' findings contradict policymakers' preconceived notions. For their part, technology developers will, at times, put forward recommendations that reflect organizational biases and solutions based on classic group-think and where-you-stand-depends-where-you-sit archetypes. Interest groups can bridge the gap, suggested a panelist, by assisting in framing the arms control issues and helping keep all sides honest.

The panelists focused on the disjointed nature of today's arms control bureaucracy and the frustration it causes. One panelist asked rhetorically: "If one were to create an arms control paradigm from scratch, would it: (1) invest the principal foreign policy mission in one establishment; (2) rely on another to provide arms control and nonproliferation direction; (3) assign operational responsibility to another; (4) rely upon other organizations for the development of enabling

technologies; (5) cede budget appropriation and authorization to a separate entity; (6) entrust the determination of export policies to an organization beleaguered by economic demands; (7) look to a separate organization for assessment of antagonists', and one's own, compliance; (8) depend on yet another to deter and, where necessary, counter proliferation-using capabilities, many based on technologies which may be the subject of various nonproliferation efforts; (9) ensconce this paradigm in an international arena, subject it to the scrutiny, slings and arrows of friends, allies, and agreement partners; and (10) expect implementation of agreements to occur flawlessly? I think not!" It is a testament to the comprehension of the parties involved that they sensed sufficient mutually-derived security benefits to agree to such arrangements as the Limited Test Ban Treaty (LTBT), Nuclear Non-Proliferation Treaty (NPT), BWC, Anti-Ballistic Missile Treaty, INF, CFE, START, and CWC, not to mention the many other treaties, agreements and confidence building measures in effect or currently under negotiation, including CTBT, FMCT, and the various nuclear-weapons-free zones.

Overall, today's system for making and implementing responsive arms control policy is beset by three basic problems:

(1) There is no place where the three communities (policymakers, developers, and users) are engaged in ongoing, collaborative problem-solving. Thus, no feedback mechanism exists, and rarely is an overall plan developed that looks at requirements, resources, or funding priorities. (There have been numerous specific efforts such as the Technical Working Group, DoD Counterproliferation efforts, and R&D efforts in the intelligence community, but few that are continuous, ex-

tensive, inclusive, and have control of funds.)

(2) Outside funders rather than the policy community define the technologies to be developed, resulting in fiefdoms, insufficient cross-fertilization, skewing of work to fit funders' priorities, poor inter-agency coordination, and limited inter-agency collaboration.

(3) The world has changed, but the bureaucracy remains the same. Today's verification challenges are different and more difficult because of a wide variety of capabilities and because of transitional domestic and international political contexts, yet the methodology behind R&D decisions is static.

Bringing Order to the Chaos

Panelists considered the concept of creating a position within the U.S. government that would lead all matters relating to arms control, what one panelist called a "nonproliferation/arms control R&D tsar." It would be a move in the right direction, this panelist said, because "now it's like an orchestra without a maestro." This person would control the relevant budgets across all agencies, serve as part of the policy community via the National Security Council (NSC), and be integrated into the implementation of arms control agreements. Creating such a position may be the only way to obtain counterproliferation, nonproliferation, arms control, and antiterrorism coordination and collaboration, the panelist added. Another panelist supported the idea because of the increased efficiency it would be able to provide, especially for research. This panelist said that it makes sense to put all of the research in one place.

Others were not as convinced of the merits of a tsar. One member of the audience suggested that creating a tsar would

be a waste of time because the gaps between the various communities are irreconcilable. The technology-developers and the policymakers are necessarily different species. Beyond different areas of operations and responsibilities are differences of time scales. Policymakers concern themselves with the immediate future, whereas technology-developers think in terms of decades for their R&D. A tsar would underscore those inexorable differences, especially because each community would compete against each other for the tsar's attention. The only solution, therefore, would simply be to encourage each side to consider the differences of the other and provide improved channels for communication.

Another critic said that technological development would be threatened. "The whole purpose [of a tsar]," a member of the audience said, "will be to down-select technology for verification. It will stifle innovation, creativity, and development." Not necessarily, a pro-tsar panelist responded, adding that the primary role of a tsar would be to foster innovation by strengthening coordinating mechanisms.

Views from the Joint Chiefs of Staff

Panelists discussed the role of the Joint Chiefs of Staff (JCS) in arms control and where the Joint Staff fits in the policy-technology-user triad. The JCS plays a unique part in arms control in the U.S. government, having both a policy voice and significant operational/user responsibilities. Above all, it must guarantee the security of the country and bear the costs of arms control treaty implementation. One panelist said that attending an inter-agency arms control meeting is like sitting at a fine restaurant in which prices are only on the host's menu; when it comes to arms control, the JCS is the host because implementation comes from DoD's military budget.

Important points the Joint Staff must keep in mind in order to operate more effectively include early participation in the arms control process from formulation through implementation, close scrutiny of the negotiations to ensure that ambiguities are resolved and that U.S. national security is not compromised, and a strong understanding about the technologies required by the verification provisions.

Summary

The panelists agreed that communication and management between policy-makers, technology developers, and user groups should be improved, but disagreed on solutions. Some thought that increased resources would help while others favored strong, consolidated leadership under the auspices of an arms control tsar. Central leadership might be able to harmonize interaction between communities, some panelists said. Others questioned the merits of such a concept, arguing that centralized leadership would cause more problems than it would solve, because it would force groups together better left on their own. Each group concerns itself with the field of arms control, but each one approaches it from perspectives that have little in common. These differences are complementary. The best solution, tsar critics said, would be to facilitate dialogue between the communities through improved communication channels, but not to alter, in a significant way, the basic organizational structure.

PANEL SESSION 1:

IMPLEMENTING ARMS CONTROL AGREEMENTS AND INITIATIVES: THE INSPECTION EXPERIENCE

Chair:

Dr. Joerg H. Menzel

U.S. On-Site Inspection Agency

Brig. General Thomas E. Kuenning, Jr.
U.S. On-Site Inspection Agency

Lieutenant General V. A. Romanov
National Risk Reduction Center, Russian
Federation

Brigadier General Nicolae Corduneanu
Ministry of Defense, Romania

Brigadier General Peter J. E. von Geysso
Ministry of Defense, Germany

Mr. Zoltan Nagy
Ministry of Foreign Affairs, Hungary

Colonel Kenneth D. Guillory
U.S. On-Site Inspection Agency

This panel offered insights into the roles inspectors play in treaty implementation. The panelists explored the role of verification in three treaties: the Strategic Arms Reduction Treaty (START), the Conventional Forces in Europe Treaty (CFE), and the Bosnia Peace Agreement. Insights were based on panelists' own first-hand experiences, and the situations they described illustrate the uniqueness of the circumstances behind each treaty. There are no easy tactics to guarantee success, but panelists stressed one common theme: Respect and tact between the inspector and the inspected can greatly enhance the verification process.

Strategic Arms Reduction Treaty: Organizational Structures

Panelists discussed organizational and logistical processes of U.S. and Russian inspection teams. The On-Site Inspection Agency and the Nuclear Risk Reduction Center are the agencies responsible for START inspections to the United States and Russia, respectively. Together, these agencies make a vital contribution in re-

ducing the likelihood of global destruction by nuclear weapons. A comparison of these two groups—the origins of which are rooted in countries with fundamentally different philosophical and political outlooks—are remarkably similar. In terms of hiring, for instance, selection of inspection teams is a rigorous process based on candidates' experiences, expertise in the field, and a strong understanding of U.S.-Russian relations. Candidates must participate in simulation exercises to demonstrate professionalism in real-world environments. Once selected, new hires continue their training. Typically, training begins with a thorough indoctrination concerning the treaty and participation in mock and/or real inspections. Inspector knowledge is continually maintained with repeated instruction on the specific site under review and the equipment needed to complete inspection tasks. This training process is crucial to the successful implementation of the treaty, because treaty inspections are technically arduous and politically sensitive.

Successful inspections hinge on strong communication skills and frequent inter-

action between teams. Open communication facilitates understanding, strengthens cooperation, and builds confidence. Panelists agreed that easy communication access has been a key factor in their success with START inspections. In addition, they urged diplomats to include specific joint inspection planning provisions in treaty documents. The panelists suggested that both teams meet regularly to discuss experiences and skills gained from inspections and training missions, as well as from inspection manuals, armament models, and other areas.

In the current organizational structure for the START inspection regime, only team leaders are allowed to resolve issues with their counterparts. The rest of the team focuses on recording ambiguities. After the inspection, experts on both sides and in relevant government branches closely examine all discrepancies. As a requirement of the treaty, these differences are then addressed via diplomatic channels or through a special bilateral commission. The panelists felt that most ambiguities can be quickly and easily resolved without outside involvement from special commissions which unnecessarily impede the inspection process. Critical impasses, such as those involving basic inspection activities and procedures of arms reduction, though rare, are better left to verification directors, however, because they are far removed from both the inspection site and separate from the inspectors themselves.

START: Treaty Implementation

The Intermediate-Range Nuclear Forces (INF) Treaty eliminates an entire class of weapon; START, in contrast, limits the number of certain types of weapons, but not the entire arsenal of strategic weapons. START verification, therefore, is much more complicated. This complexity is seen in the treaty's Reentry Vehicle On-

Site Inspections (RVOSI) requirements. RVOSI follow a prescribed sequence: (1) declaring a missile to be inspected, (2) verifying the location of the specified missile, and (3) viewing and counting the warheads. While these may appear to be simple activities, inspections of this type are technically and physically rigorous. Inspection procedures of intercontinental ballistic missiles (ICBMs) and submarine-launched ballistic missiles are no easier. The specific procedures vary, depending on the type of missile. The panelists reiterated that the conduct of inspections requires extreme cooperation and coordination by both sides to complete a successful inspection.

Like the INF Treaty, continuous monitoring of factories for the manufacture and transportation of missiles is permitted under START. A continuous, portal monitoring team from the United States is located at the Machine Building Plant in Votkinsk, Russia, while the Russians have a team at a missile plant in Magna, Utah. This process, said the panelists, has built trust and confidence at all levels.

While most types of inspections are fairly straightforward, heavy bomber inspections have interpretive peculiarities that complicate the inspection process. An inspector must determine the exact number of aircraft of a certain type and all the weapons with respect to the so-called "distinctive" features. Experience with heavy bomber inspections has suggested that the actual inspection often differs from that outlined in the treaty provisions. The panelists suggested that the process could be made more efficient if both sides were able to devise universal methodological approaches. Whether or not this can be achieved is uncertain, given the unique circumstances that surround each inspection type. Overall, high-level preparation and professionalism between

the states parties have helped to deliver accurate and thoughtful reporting.

Conventional Forces in Europe Treaty

The CFE was conceived of during the Cold War amidst bipolar tensions. At the time, NATO's conventional force ratio was judged to be inferior to the Warsaw Pact in quantitative terms. With the implementation of the CFE, the force ratio is now nearly equivalent. Beyond the establishment of set ceilings for all types of conventional weapons, panelists said that the CFE was designed to address two primary tasks: (1) eliminate the capability of a surprise attack or a large-scale offensive operation, and (2) decrease the likelihood of war by misunderstanding. Like the START Treaty, CFE implements a verification regime containing an inspection protocol.

CFE Inspection Experiences

All states parties have endeavored to fulfill treaty obligations completely and correctly. Cooperation between states parties has been excellent, characterized by competence, openness, and mutual respect. The conduct of inspections has followed the binding provisions of the treaty's protocol on inspections. While incongruities have arisen with regularity, they are almost always oversight errors rather than deliberate attempts to circumvent treaty stipulations. Great success has been achieved with the coordination and cooperation of multinational inspection teams, which integrate foreign inspectors from all states parties. Problems arising from differences in interpretation of provisions have been the exception; the NATO joint inspector training courses in Oberammergau have had a very favorable effect in limiting these differences.

The implementation of such an intricate treaty cannot be accomplished with-

out some difficulties. The main shortfalls observed in treaty implementation to date have included the following: Force reductions have not been met by some states parties due to economic difficulties and conflicts between states; some states parties have surface holdings of treaty limited equipment (TLE) which have not been destroyed but instead have been earmarked for export; arms reduction liabilities on the holdings of TLE in the Black Sea Fleet are not regulated in the treaty regime; and conflict areas cannot be verified because the safety of inspection teams cannot be ensured.

Overall, the objectives of the CFE Treaty have been met. The treaty proved its ability to cope with all of the dramatic political changes that have occurred during the last five years and is now firmly embedded in the European landscape. It has established a framework for the transformation of former confrontational bipolar elements to a new multipolar equilibrium and has facilitated the realization of greater stability in an area previously envisioned as the staging ground for World War III. In short, the CFE Treaty serves as a model of cooperative security.

Bosnia Peace Agreement: Negotiations

The January 1996 peace agreement between the Bosnian Federation and Serbian Republic marked the end of a bitter conflict, based as it was by centuries-old cultural and ethnic hatreds. Outside negotiators at the Dayton Peace Talks knew that if the peace agreement was to have any hope of permanence, the warring sides would have to transcend the suspicion, distrust, and animosity that had defined their interaction for so long. In an effort to make the peace take hold and blossom, therefore, negotiators included confidence and security building measure (CSBM) requirements in the treaty.

The transition from war to peace is easier said than done. As negotiations on CSBMs began, both sides were inclined almost by instinct to conceal information rather than be forthright and truthful. After all, much of the information required in the data exchange stipulated by the treaty had previously been considered classified. A genuine desire to establish peace ultimately prevailed, and distrust has slowly abated.

The CSBM negotiation process was conducted while serious political ambiguities prevailed. The Peace Agreement outlined only a general constitutional framework for Bosnia, because the signatories had to accommodate a new organizational structure put together by a yet-to-be elected parliamentary body. As a result, both sides seized every opportunity to strengthen their positions by attempting to formulate self-serving provisions of the treaty. They attempted to politicize provisions, but political debate was stopped by Organization for Security and Cooperation in Europe (OSCE) negotiators, forcing both sides to concentrate on the specific issues of the agreement.

As could be expected, the Bosnians and Serbs had little experience with CSBMs. Many technical difficulties were encountered while representatives on both sides learned necessary logic and vocabulary. Because of these difficulties, it was clear to OSCE representatives that traditional CSBMs would not apply and that stricter provisions than those in the CFE Treaty would have to be imposed and new CSBMs added. The OSCE attached intrusive CSBMs. More experienced negotiators might have recognized the subtle distinctions; however, both sides readily accepted OSCE proposals.

Time restrictions put added pressure on the negotiations, owing to the fact that the Dayton Agreements allowed only 45

days to conclude CSBM negotiations. Negotiators adhered to the letter and spirit of the Peace Agreement and quickly executed an exchange of military information and concluded a Protocol on the mutual establishment of Military Liaison Missions. The successful completion of these tasks was a direct result of the cooperative and conciliatory atmosphere that evolved during the negotiations.

On-Site Inspections of the Former Belligerents

A core aspect of the CSBMs is the arms control arrangement included in the Bosnian Peace Agreement. Inspectors from the OSCE as well as inspectors from Serbia and the Bosnian Federation collect military exchange data, verify numbers of heavy weapons, and conduct inspections. This is an international OSCE function, unique from the START and CFE implementation processes discussed earlier.

The process begins with the OSCE selecting the lead nation for an inspection, and the OSCE verification coordinator determining the site. The objective of these inspections is to gather data for the states parties via the OSCE inspectors, and then to determine if the data are correct. In this way, the level of confidence and security is increased between the signatory nations.

As teams have become better educated and trained in the inspection process, information gathering and translation has become more accurate and the inspection procedures improved. Human error is common, and inspection teams have plenty of room for improvement. Reported data are frequently inaccurate and incomplete. Also, interpreters were initially weak, because of their lack of experience with arms control terminology, yielding unreliable translations.

In addition, inspectors from the warring sides are naturally suspicious, while commanders of the inspected sites have exhibited professionalism and tact. Underlying mistrust lingers, however, despite genuine efforts to implement the terms of the agreement.

Only time will allow a more significant level of trust in the inspection process. Inspections will continue to be performed under Article II of the agreement, while the specifications of inspection in Article IV of the agreement are still under negotiation. Inspections under Article II have indicated a need for emphasis on a comprehensive inspection training program for Bosnian and Serb inspectors before implementation, to help facilitate the inspection process.

Despite the enormous challenges, it is possible to negotiate and implement a peace agreement between former belligerents if there is a will to negotiate and establish peace. Much progress has already been made, but some panelists suggested that the international community should sustain the momentum by granting credible security guarantees, providing assistance for reconstruction, and promoting democratic reform.

Summary

Arms control inspectors must be utterly dispassionate, completely dedicated to their mission, and steadfast in their pursuit of truth. As the panelists stressed, good inspectors also require a sophisticated understanding of the sensibilities of the inspected, who are, after all, exposing their innermost "secrets." Whether the agreements are bilateral/nonconventional (START), multilateral/conventional (CFE), or multinational/conventional (Bosnian Peace Agreement), inspectors must possess mutually independent but complementary traits: poise and sensitivity on the

one hand, focus and determination on the other.

PANEL SESSION 2:

SMUGGLING AND SPREAD OF WEAPONS OF MASS DESTRUCTION: REQUIREMENTS FOR CONTROLLING ARMS AND COUNTERING TERRORISM

Chair:

Mr. Michael Moodie

Chemical and Biological Arms Control Institute

Dr. David A. Kay

Hicks and Associates/SAIC

Dr. Igor Khripunov

Center for International Trade and
Security, University of Georgia

Dr. Graham S. Pearson

University of Bradford, UK

Mr. Ron Purver

Canadian Intelligence and Security
Service

In the first half of the 1990s, arms control and nonproliferation efforts were dealt a triple blow that called into question the effectiveness of traditional methods for controlling proliferation and exposed new sources of the proliferation threat: (1) The Tokyo subway nerve gas attack by the Aum Shinrikyo cult highlighted the twin threats of chemical and biological proliferation and the use of such weapons by subnational groups. (2) The collapse of the Soviet Union and its security and export control apparatuses opened up a potential new source of both materials and expertise to proliferators. (3) Finally, with the Persian Gulf War came the discovery that Iraqi programs for development of nuclear, biological, and chemical (NBC) weapons were much more advanced than either Western intelligence or international arms control monitors had suspected.

Panelists addressed the aforementioned events and provided suggestions on possible ways to make arms control regimes more effective in countering proliferation threats, beginning with the newly recognized threats of chemical and biological terrorism and the former Soviet

Union as a potential source of proliferation; proceeded through a discussion of why virtually all analysts failed to recognize the scope and sophistication of the Iraqi weapons programs; and concluded with a discussion of how confidence-building measures (CBMs) can be developed for the Biological and Toxin Weapons Convention (BTWC) that take these lessons into account.

Chemical/Biological Terrorism

The nerve gas attack by the Aum Shinrikyo cult demonstrated that subnational groups can obtain and use chemical and biological weapons. While a staple of pulp fiction thrillers for years, this threat had never materialized. Possible reasons for this lack of use include the uncontrollability of the agent, unpredictability of the consequences of use, loss of public support, fear of unprecedented retaliation, lack of need for indiscriminate attacks, and a reluctance to experiment with unfamiliar weapons. Now that the taboo has been broken, the arms control community must determine the overall significance of a chemical and biological weapons threat and how to adapt mecha-

nisms that are designed to thwart state actors to be effective in dealing with sub-national actors.

The principal advantage of chemical and biological weapons is their extreme toxicity, which provides the capability for large-scale attacks using small quantities of agent. Certain biological agents such as type-A botulinum and anthrax are especially toxic, with casualty rates that could, under optimum conditions, approach those of a low-yield nuclear explosion. Chemical weapons, used under optimal conditions, can be almost as devastating, causing thousands of casualties. The low number of casualties in the Tokyo subway incident by the Aum Shinrikyo Cult was attributed to the dilution of the agent, the very small quantity of chemicals used, the rapid response of emergency personnel, and the powerful air exchange system in the Tokyo subway.

Another advantage is that chemical and biological weapons give more "bang for the buck" than do conventional or nuclear weapons. The small quantity of chemical or biological agent required reduces the cost and complexity of its acquisition and eliminates the need for a large infrastructure of personnel and facilities for its production. Pound for pound, chemical and biological weapons are much more destructive than conventional weapons and do not require the infrastructure and investment needed for nuclear weapons. The low cost of biological weapons, especially, makes them attractive to non-state actors who typically lack the financial assets of sovereign governments. Clearly, there are a number terrorist groups, both state-sponsored and independent, with the wherewithal to acquire chemical or biological weapons should they choose to do so.

While the production of chemical and biological weapons is more complex than

that of conventional explosives, it does not require the numbers of highly skilled scientists and engineers that the production of nuclear weapons necessitates. Opinions vary as to the level of expertise required for chemical and biological development, ranging from high-school student to graduate student to a team of professional scientists. A massive and long-term effort to recruit science graduates of the most prestigious universities was undertaken by Aum Shinrikyo prior to the Tokyo incident and probably contributed to it. Aum Shinrikyo proved that small groups with limited expertise can produce and employ such a weapon.

Other advantages of chemical and biological weapons include the inability of traditional antiterrorist sensor systems to detect them; the time lag between release of agent and its effect on humans, which allows the perpetrator to escape; lack of an agent "signature" which can mask the cause of death; adaptability to small demonstration attacks; and the high degree of terror on a target population.

With regard to actually producing a chemical or biological agent, there is a staggering number of agents available to terrorists. Less toxic, but still deadly, industrial chemicals could be used. In addition, there are tradeoffs between chemical and biological agents. Chemicals are cheaper and easier to manufacture, control, and use, but biological agents are more easily purchased in sufficient quantity and could produce more casualties.

Rather than manufacturing chemical or biological agents themselves, terrorists could acquire them from legitimate suppliers, steal them from research facilities and military installations, or receive them from foreign state sponsors. Many hazardous substances are commercially available, and biological agents occur naturally in the environment. The Tokyo

incident was surprising, in that the terrorists chose to manufacture a relatively sophisticated nerve agent rather than employ an off-the-shelf chemical agent.

Mechanisms for employing chemical and biological weapons are varied. Agents can be delivered through contamination of food or liquid or, more likely, vapor or aerosol. Air conditioning systems, tunnels and subways are especially vulnerable; any enclosed place where many people gather, such as a domed sports stadium, would be an "ideal" target. City water supplies, once thought a prime target, are too large to achieve an effective concentration of agent, but isolated water supplies in individual buildings could be effective targets.

The Tokyo incident has set an important precedent, enabling others to ask whether or not they should adopt such tactics; however, the Tokyo incident has also served to heighten official awareness, increasing pressure on governments to explore defensive measures and to cooperate with one another in preventing or mitigating such atrocities in the future. Historically, less attention has been paid to chemical and biological threats than to their nuclear counterpart. There have been recent initiatives launched to improve government preparedness against terrorist chemical or biological threats, including the creation of an interdepartmental Nuclear, Biological, Chemical Working Group in the United States and internationally-coordinated research efforts and joint military exercises. Much remains to be done in order to handle the growing chemical and biological threats effectively.

Overall, because of several factors—increased security against traditional terrorism, public indifference to traditional terrorism, a recent increase in high-casualty/less discriminate attacks, growth

of state sponsored terrorism, and increased availability of materials and expertise from the former Soviet Union and its former satellites—the likelihood of future terrorist use of chemical and biological weapons is considerable and growing.

Proliferation Patterns in Russia

The collapse of the Soviet Union brought with it the collapse of the Soviet security and export control systems. The nations of the former Soviet Union are now attempting to reconstruct those systems. Russia, which inherited most of the remnants of the Soviet system, is better prepared than others, but the task is still formidable. The current proliferation issues confronting the Russian government include brain-drain and information seepage, material control and accounting, export controls, and prevention of smuggling.

Russia has implemented restrictions on NBC weapons personnel and information. Travel restrictions on people with access to classified information are now in place, as defined in the Law on State Secrets of 1993 and President Yeltsin's edict No. 346 of 9 March 1996, "On the State Program for Ensuring the Protection of State Secrets." The Presidential State Technical Commission and the Inter-agency Commission on the Protection of State Secrets regulate information flow and information leakage issues. Additional efforts by the Russian government include presidential decrees on licensing consulting services, introduction of a system of registration for agreements on international cooperation, and a draft resolution on state ownership rights regarding private sector work carried out with federal money.

Also, incentives have been introduced to employ Russian scientists and to reduce the likelihood of flight of specially

trained personnel. These include Cooperative Threat Reduction (CTR)-associated defense conversion projects, employment with the International Science and Technology Center, and contract work with private sector firms from the West.

Russia has also begun participating in international export control groups, becoming a full member of the Nuclear Suppliers Group, Missile Technology Control Regime, and Wassenaar Arrangement. It has established appropriate government structures and interagency mechanisms through presidential and governmental decrees and resolutions. Violators of the above decrees and resolutions are liable under penal code.

Unfortunately, Russia's export control system has a number of significant weaknesses. It is severely underfinanced and understaffed. Thirty percent of all exports bypass customs. In addition, the customs system has problems with corruption, customs unions, and technical support. Export-oriented defense industries also add pressure to Russian export control regimes. Over half of their products are currently exported with no internal compliance mechanisms. The enforcement program is weak, and there is no mechanism in place to verify end use. Finally, a lack of mobile laboratories prevents customs officials from verifying claims regarding packages and materials.

To improve the export control system, the Russian government must establish mobile laboratories for improved technical capabilities, sufficient authority to enforce export control issues, internal compliance systems, and an integration of export controls into other economic issues.

Russia also faces an enormous challenge of controlling NBC-related resources. Within its borders Russia has approximately 1,200 metric tons of highly

enriched uranium and 200 metric tons of plutonium; 40,000 agent tons of chemical weapons; facilities previously involved in the offensive biological weapons program; and 2,000 production facilities and 660 research centers from the old Soviet military-industrial complex. While there is little evidence that NBC weapons or material have already been smuggled out of Russia or are currently available illegally within Russia, the combination of organized crime, porous borders, and widespread corruption indicates that this threat cannot be discounted.

The Russian government recognizes the enormity of the task, but awareness has not yet given way to action. In 1995, only ten percent of the money earmarked for material control and accounting has been given to the agency in charge of developing a national material control and accounting system. As the more immediate problems of the transition to a democracy are resolved, however, proliferation will become a larger issue and receive even greater attention.

Russia's problem with proliferation is a supply-side issue, relatively easy to solve provided the resources are available to implement effective controls on sensitive personnel and materials. Demand-side proliferation control is harder to implement. There is little that can be done to halt a nation intent on acquiring special weapons. In fact, as Iraq has demonstrated, it is difficult even to detect the scope and progress of a proliferant's attempts.

Detection and Cheating: Lessons from Iraq

The failure of International Atomic Energy Agency (IAEA) safeguards inspectors and national intelligence authorities to detect the magnitude and advanced character of Iraq's nuclear weapons pro-

gram prior to the Persian Gulf War makes it clear that a determined opponent can side-step requests for on-site inspections and national intelligence and pursue proliferation efforts. At the time of the Gulf War, Iraq was less than a year away from its first crude nuclear device and no more than three years from more advanced, deliverable weapons. The Iraqi situation signals the danger of the proliferation threat and shows how efforts to thwart proliferation require early and vigilant responses from the global community.

The latest evidence from the United Nations Special Commission (UNSCOM) reveals that an Iraqi nuclear weapons program of approximately \$8 to \$10 billion, with more than twenty sites and 15,000 people, was in place in 1991. Only six of these sites were known at the time of the Gulf War. At the war's outbreak, Iraq was engaged in a crash program to strip uranium out of research reactor fuel and further enrich it, with the goal of producing a single nuclear device by April 1991.

Iraq's biological weapons program was the threat about which the least was publicly known. This program was of astounding scope, having produced 19,000 liters of concentrated botulinum toxin (10,000 liters of which had been weaponized) and 8,500 liters of concentrated anthrax (6,500 liters weaponized). Iraq was able to implement such a remarkable biological program secretly in only five years. At the time of the Gulf War, the Iraqi government had loaded twenty-five missile warheads with biological agent and had authorized their use to military personnel.

Before the war the Iraqi chemical weapons program was known to have produced hundreds of thousands of gallons of mustard and nerve agents. In fact, owing to the use of these chemical agents

during the Iran-Iraq War and later against Iraq's Kurdish population, the Iraqi Army is considered to have more combat experience in employing chemical weapons than all combined armies of NATO and the former Warsaw Pact. Nevertheless, very little was known about actual chemical weapons production capabilities. As an example, although the new agent program was originally thought to be struggling, at war's start it was actually producing 500 tons per year, including very stable compounds for stockpiling.

Iraq's missile program is better known as a result of Iraqi SCUD attacks on Israeli and Saudi targets. The Soviets sold SCUD missiles to Iraq, but Iraq also produced and developed its own capabilities based on SCUD technology. It should be noted that Iraq's efforts to acquire NBC weapons and missiles did not end with the Gulf War and are ongoing.

Two major lessons can be drawn from the Iraqi experience:

- Be wary of arms control arrangements that have mixed agendas. In particular, avoid mixing promotional and regulatory responsibilities within the same organization. This results in a noncompliance dilemma wherein inspectors are attempting to verify compliance and do not want to find noncompliance activities.
- Seek out ways of making the best information and latest technology available to inspectors. Very few inspection regimes have recognized and identified the dynamics of technology. The technology of today is very different than the technology that existed when some of the inspection regimes were developed. Arms control agreements that cannot adapt to changes in technology will become, at best, irrelevant and, at worst, dangerous.

Strengthening the BTWC

Today's formidable task is not just to recognize and redress the failures of yesterday but to develop new verification and confidence-building regimes with the lessons of the past in mind. One such regime currently under development is the Biological and Toxic Weapons Convention (BTWC) and its associated CBMs.

All too often the threat represented by biological weapons is overlooked. Biological weapons have been proven to be feasible by all means short of actual use. The work carried out in the 1950s and 1960s is still valid, and advances in biotechnology have made biological agent production easier. There is real cause for concern in light of the discovery of Iraq's offensive biological capabilities and the 1992 Russian admission of a continuing biological weapons program.

With nuclear and chemical treaties being enacted and extended, biological weapons are seen as an increasingly attractive option. There is a need, therefore, to strengthen the international norm against them. Currently, biological weapons are prohibited through a variety of acts, including the 1925 Geneva Protocol, the 1972 BTWC, the 1986 and 1991 BTWC Review Conferences, and the BTWC's politically binding confidence-building measures. Some of these measures have had disappointing results, and the measures are not adhered to universally, but political will is increasing to support a strengthened BTWC. As an example, the number of states submitting declarations under the CBMs has increased steadily, from approximately 15 in 1987 to over 70 in 1995.

The report of the November-December 1995 Ad Hoc Group Meeting proposed a BTWC regime which would include declarations/notifications, on-site

visits/inspections, investigations of alleged use, and multilateral information sharing. It pointed out that all of the necessary components to constitute a legally binding instrument to strengthen the BTWC already exist and just need to be gathered in a coherent way; they are already required by other arrangements, such as the Chemical Weapons Convention, the IAEA safeguards program, and the Conventional Forces in Europe Treaty. These elements include mandatory declarations, on-site inspections (both non-challenge and challenge), and investigations of alleged use.

In order to craft an effective regime, the focus should be placed on essential requirements to avoid causing unwarranted opposition. There should be no requirement to declare all facilities, and declarations should be limited only to those most relevant. Declarations of the relevant facilities should be mandatory, meet precise requirements, and provide coherent and relevant data. In addition, precision is needed for descriptions of items to be declared. It is important that the requirements for what must be declared are clear to avoid unnecessary concerns arising from misinterpretation, uncertainty, and confusion. Most inspections should be for the purpose of confirming declarations; challenge inspections will be used to investigate concerns. These inspections should be used to reinforce states parties' obligations to the BTWC. Inspections will also allow the BTWC organization to have a better understanding of the states parties' approaches and, thereby, improve the quality of its judgments.

When treaty measures are used in combination, they reinforce one another, which results in enhanced treaty effectiveness. For example, declarations in combination with on-site inspections build more confidence of compliance. Likewise, these two measures in combina-

tion have an enhanced deterrent effect, as it is harder to hide noncompliance. As seen through an evaluation of both feasibility and effectiveness, a system of measures implemented into a legally binding instrument can strengthen the BTWC.

A strengthened BTWC is achievable primarily because only the application of coordination and coherence is required. The political will is evident, and all elements of the regime are feasible and effective. There is a need for increased momentum concerning biological weapons issues, and now is the time to act.

Summary

Proliferation and smuggling concerns have risen to the forefront of international security policy. This, coupled with the threat of terrorist organizations using chemical or biological weapons, is forcing the arms control community to examine how traditional arms control and nonproliferation tools can be improved and applied to meet these new, growing, and important concerns.

Opponents of arms control point out the weaknesses and limitations of arms control conventions and attempt to make an argument against these treaties and agreements. Arms control proponents, however, strive to improve the regimes and develop the necessary arguments to convince nay-sayers of the critical importance of arms control to worldwide security. The first line of defense remains national export control and security systems. Traditional verification and confidence-building tools serve as the next line of defense in ensuring that proliferation is detected and contained. Regimes must also have enforcement measures properly focused on the nonproliferation mission and tools adequate for the job. They must not be hampered by secondary, conflicting objectives or by bureaucratic rules

and restrictions that limit their effectiveness by denying them the security tools needed for effective inspections. Finally, and most importantly, regimes must not be focused on only one path to proliferation. If they are, aspiring proliferators and proliferants will simply take another route.

PANEL SESSION 3:

CONTROLLING ARMS IN THE FAR EAST: REGIONAL AND GLOBAL IMPLICATIONS AND OPPORTUNITIES

Chair:

Ambassador Ronald F. Lehman II
Lawrence Livermore National Laboratory

Mr. Edward T. Fei
Department of Energy

Dr. Kongdan Oh
Institute for Defense Analyses

Ms. Wendy Frieman
Science Applications International
Corporation

Mr. Kyle B. Olson
TASC, Inc.

Until recently, arms control was defined by geostrategic issues facing the superpowers of the Cold War. Today, there is a renewed recognition that proliferation of weapons of mass destruction (WMD) and missile technology threatens security on a regional basis throughout the entire globe. This has created a shift in perspective in that the arms control community is now focusing its attention on the regions of the world in an attempt to understand the variables and factors—unique to each region—that might cause a country or non-state actor within a region to acquire and use WMD.

As became clear in this panel, the Far East is particularly vulnerable, not only because it is a major political, military, and economic battleground for some dominant players, but also because arms control is an alien concept to many of the regional powers. Its novelty can be seen in China, which is only now beginning to confront the question of arms control seriously. In Northeast Asia, the validity of arms control is being held hostage by a deep distrust and animosity harbored by North and South Korea. Japan is moving swiftly to strengthen arms control regula-

tions in the aftermath of the harsh lessons learned from the 1995 Tokyo gas attack by a religious cult. Overall, there is a world of opportunity in the Far East for the advocates of controlling arms, but so too for those who would turn today's arms control opportunities into tomorrow's challenges and threats.

Perspective Shift

Arms control is undergoing a perspective shift as it moves away from a reactive security orientation to an emphasis on understanding what motivates countries to seek, and in some cases to demand, nuclear weapons and other WMD. Invariably this leads to a focus on individual countries and geographic regions. Treaties such as the Nuclear Non-Proliferation Treaty (NPT), the Comprehensive Test Ban Treaty (CTBT), as well as the proposed Fissile Material Cutoff Treaty address regional security issues, because they are largely aimed at nuclear weapons threshold states which, if they acquired nuclear weapons capabilities, would disrupt regional geopolitical equilibria; these disruptions, in turn, would have global repercussions.

The "demand-side" approach to arms control can also be recognized in President Clinton's Directive on Nonproliferation and Export Control. During the Cold War, U.S. policymakers concerned themselves with "supply-side" countries, that is, those in the East and West that controlled the supply of nuclear weapons. The U.S. policy approach could be characterized as adversarial, secretive, and limited to the executive branch.

Today's regional approach is more consistent, unclassified, and open. In every region, whether it is Latin America, the Middle East, or Northeast or Southeast Asia, the United States seeks to promote "peace and stability." The role of the State and Defense Departments has shrunk as the involvement of other agencies, think tanks, universities, and individuals has increased. One panelist said that the role former President Jimmy Carter has played in U.S. foreign policy in recent years illustrates how participation in U.S. foreign policy has expanded.

Comparisons between Western Europe and the Far East

Comparisons between Western Europe and the Far East are largely tenuous. Whereas nationalism has run its course in Western Europe, in the Far East it is a powerful galvanizing force. The Far East has no comparable security structure like NATO, except for the Association of Southeast Asian Nations (ASEAN) security group; the ASEAN Regional Forum, which consists of only five states; and the Northeast Asian Cooperation Dialogue (NEACD), which is a small diplomatic initiative between mid-level government officials from the United States, Russia, China, Japan, North Korea, and South Korea. North Korean attendance at NEACD meetings has been erratic.

China and Arms Control

Arms control, premised as it is on rules, institutions, and openness, is new to the Chinese, for whom arms control is part of a larger zero-sum game. To the Chinese, the idea of limiting arms is counterintuitive, unless it is one-sided, in which case it can enhance China's national security. Given these preconceived notions on arms control, it is not surprising that China has no arms control infrastructure in either the technology or policy areas. Official Chinese statements on arms control agreements such as the NPT and CTBT have been convoluted and difficult to interpret. Transparency, a core tenet in arms control, is viewed with outright hostility in China. The Chinese prefer, instead, informal, secretive, and ad hoc arrangements as opposed to structured arms control regimes. China's proclivities toward the informal can be seen in its approach to North Korea's decision to pull out of the NPT in 1993. Whereas the U.S. government sought to apply direct pressure on the North Koreans through official methods in the United Nations Security Council, China favored behind-the-scenes diplomacy.

China has made no comments regarding a policy on strategic arms control and continues to push back the date when it might be willing to make such comments. Past behavior, however, indicates a few trends. Typically, China favors commitments to arms control and nonproliferation agreements which (1) are inexpensive to implement, (2) require a minimal loss of sovereignty, (3) preclude foreign intrusion, and (4) disclose information that is already widely available to outsiders.

China has a mixed record in arms control compliance, and it participates only in agreements such as the CTBT, Missile Technology Control Regime, and

the NPT that lack strict and precise requirements. Although Japan momentarily withheld some financial aid to China in protest over Chinese nuclear weapons testing, the United States is the only country willing to pressure China to adhere to arms control and nonproliferation regimes. This makes it easy for China to confuse U.S. concerns over adherence with other bilateral disagreements such as Taiwan and U.S. policy with respect to theater missile defense. When China does respond to U.S. pressure it is in ways the U.S. government does not anticipate, such as the expansion of the moratorium on nuclear testing, which had the effect of speeding up China's testing program.

There are many different interpretations of Chinese behavior. The optimists believe that China supports arms control, but the concepts are so alien that errors are commonplace and frequent. Non-compliance is symptomatic of China's lack of experience and knowledge. As China learns more about the field, non-compliance will diminish. The development of the economy will improve arms control efforts as well. This view holds that resistance to arm control will diminish with economic growth, which will create the emergence of a middle class and will be followed by a call for democratic values and ultimately the acceptance of Western defense values that encompass arms control.

On the other end of the spectrum is the view that China fundamentally opposes arms control and merely wants the benefits of participating in global arrangements while constraining the behavior of its competitors via arms control agreements. Another view holds that China does not understand what arms control means and wants to maintain flexibility and bide time while it develops an arms control policy. Finally, some pessimists argue that even if China favored

arms control, it lacks the wherewithal to enforce any agreement because of the weak nature of its central government; therefore, the Chinese government should not be trusted no matter what declarations are made in public.

The majority of outside views favor the optimistic explanations. Most believe that as the Chinese economy develops, government institutions will be expanded, and China's commitment to arms control will be enhanced. It is imperative to keep China engaged and keep the economic development machine moving. This predominant view holds that there will be a growing convergence of views between China and the U.S. government over time as China develops; it is simply a matter of time.

Northeast Asia and Arms Control

Arms control is slowly beginning to take root in Northeast Asia, but has yet to flourish. Age-old suspicions between countries linger as memories of cross-border injustices endure, such as ingrained fears of hegemonic aggression from Japan and China, China's belligerent assertiveness against Taiwan and other nations in the region, and Japan's colonial guilt that prevents it from acting more confidently to counter China's aggressiveness. Also, there are large cultural, political, and socioeconomic gaps that have yet to be bridged between the countries of the region. The lack of a multilateral forum or organization where all of the countries of the region can engage in a constructive manner to resolve issues, strengthen relations, and discuss regional topics including arms control further weakens the prospects for improved interaction. Each country has different concepts of national security. The U.S.-Japan security alliance guarantees Japan's national security, but China and North Korea see it as a threat. North Korea creates

additional problems because the entire region views it with distrust.

Arms control between the Koreans is intimately linked to overall North-South relations. South Korea has a deep-seated distrust of the North and believes that relations should improve by implementing political confidence-building measures (CBMs) first. In contrast, the North wants political CBMs, force reductions, and a U.S. withdrawal from the peninsula to occur simultaneously. Both sides have agreed to the basic composition of political and military CBMs. North Korea has put forward the following political CBMs: the cessation of mutual vilification, the guarantee of freedom of publication and thought, the elimination of South Korea's national security law, the removal of the wall dividing the Korean peninsula, free and open cross-border visitation, and joint membership in international organizations. South Korea's political CBMs include: the cessation of mutual vilification, freedom of the press and media, and the establishment of permanent liaison offices in each capital.

North Korea's view of arms reduction rests on a three-step process after the completion of a signed arms reduction agreement. During a period of three to four years, troop size would be reduced on each side from 300,000 to 200,000 and then, finally, to 100,000. In addition, the North Koreans require the cessation of weapons modernization, the gradual withdrawal of U.S. forces, the denuclearization of the peninsula, and the establishment of a joint committee to conduct inspections of military facilities to verify compliance.

South Korea's principles of arms reduction include the mutual reduction of offensive weapons, reduction of reserve and regular troop size, the establishment of a joint inspection team and permanent

observation team, and the mutual agreement of force structure and strategy as part of a larger unified Korea strategy.

The South Korean approach to CBMs has been criticized for its lack of concrete suggestions reducing force structures and for its lack of an ultimate plan after the proposed reduction is to take place. The North Korean approach has been criticized for its lack of transparency, its overemphasis on troop size to the neglect of weapon systems, and the lack of verification concepts. Both approaches have been criticized because they lack risk reduction measures (hot-line and joint military committee are seen as insufficient), spontaneous volunteerism such as the type of sincere gestures made by Gorbachev in arms negotiations with the United States. Unilateral reduction concepts and nonemotional and dispassionate negotiation styles are entirely absent.

In the last months of 1991, accomplishments were made both in reconciliation and arms control. The Agreement of Reconciliation and the Agreement of Denuclearization of the Korean Peninsula were signed in December 1991. These two historic documents were seen as the Magna Carta of the Korean peninsula that would usher in a new framework for interaction. The two Koreas decided to form subcommittees to handle logistical and procedural agendas of implementing the two agreements; however, North Korea's refusal to allow International Atomic Energy Agency challenge inspections and its decision to pull out of the NPT seriously damaged relations between North and South, and little has been accomplished since.

Recently, arms control has begun to receive more attention due to incursions into the demilitarized zone (DMZ) by North Korean soldiers. These activities illustrate North Korean military frustration

over the lack of U.S. and South Korean response to the North Korean offer to replace the Armistice Agreement into a permanent peace mechanism. Perhaps this might awaken renewed diplomatic efforts.

Tokyo Subway Attack and the Aum Shinrikyo Cult

On 20 March 1995, an incident occurred which underscores the future challenges that advocates of controlling arms face from non-state actors. That morning five packages were placed in the Tokyo subway system at the height of commuter rush-hour activity. The packages began to leak a fatal compound. No one knew what the compound was, but it became clear that the principal agent was the nerve gas Sarin. Originally, the attackers had planned to place the packages on no fewer than six trains, but there was only enough Sarin for five trains. The goal was to cause fatalities and injuries throughout the city of Tokyo, and also to bring a variety of chemical attacks converging with maximum impact at the main subway station and a headquarters of the Japanese police force. The cult had learned that the police were planning to move against the cult later that week, so the decision was made to strike before the police could hit first. The cult's leadership had gained the information from cult members who were employees of the Japanese National Police Agency and Japan's National Defense Forces. By the end of the day, fifteen different subway stations had been affected by the attack. Some stations had as many as 500 injuries. Several thousand injuries have been posted by the police, including 12 fatalities and an additional number of people in a permanent vegetative state.

The attack was planned by the cult's leader Shoko Asahara, a man with dramatic ambitions whose ultimate goal was the complete overthrow of the Japanese

government. He had planned for a series of violent activities which were to culminate in an attack on Japan's parliament slated for November 1995. He was forced to change his plans once he discovered the planned police move against his cult. The decision to shift the date of the attack was made on 17 March, which means that the subway gas attacks were organized in no more than a few days.

The cult's interest in WMD can be traced to its belief in a prophecy from its leader that world's end was near and that the cult was to usher in the new age in which only a remnant of "true believers" would survive. Asahara described all of this in great detail in a book he wrote and published. The cult was successful in recruiting well educated young people as well as scientists, and it recruited heavily from universities by providing spiritual answers to impressionable and spiritually perplexed youth. The cult started as a Buddhist organization and later integrated Hindu and Christian characteristics, especially the Christian notion of Armageddon. Total membership is uncertain but is estimated to be between 20,000 and 60,000 people.

The subway attack caught Japan and the world by surprise, even though the attack was clearly anticipated by the Tokyo police. Japanese officials had known about the dangers for months. Foreign intelligence services including the CIA admit that they knew nothing of the planned attack, despite clear warning signs and precursor attacks throughout Japan. In 1994, the nerve agent Sarin, the same agent used in the Tokyo attack, was released in two Japanese towns. A week before the subway attack, three briefcases filled with devices for gas bombs were discovered in the Tokyo subway.

The cult has been extremely active abroad with offices in the United States,

Russia, and Sri Lanka. Cult members in the United States purchased many of the supplies used in the subway attack. In Russia, cult members tried to recruit chemical engineers to assist in weapons construction activities. Despite the cult's enticement of \$1,500 and a round-trip plane ticket to Japan, not a single Russian engineer accepted the cult's offer, although cult members did buy large pieces of equipment in Russia such as helicopters. The cult attempted to mine uranium in Western Australia but failed. In 1992, the leader, accompanied by two dozen followers, went to Zaire on a "mercy mission" to assist Africans afflicted with disease. The presumed reason behind the trip, however, was to observe the development of biological disease in Africa and, if possible, to collect samples of the Ebola virus.

The subway attack has added momentum to Japanese arms control efforts and may have accelerated Japan's ratification of the Chemical Weapons Convention. In addition, Japan passed strong legislation preventing the production of harmful chemical and biological agents. The attack itself was noticed, no doubt, by other terrorist groups. The ease with which the attack was made and the surprise of Japanese and foreign authorities is particularly striking. The incident demonstrates the need for stronger information-sharing structures between countries, especially in traditional regions of terrorist activism such as the Middle East.

Summary

Arms control is still in its embryonic stages in the Far East and has yet to find a single focal point. China's arms control policy is especially erratic and virtually incomprehensible to most outside observers, suggesting that a comprehensive approach to arms control within the Chinese government is underdeveloped at

present. In Northeast Asia, arms control is more a normative goal than it is an impending reality as long as relations between North and South Korea are marred by distrust and suspicion. The Tokyo subway attack triggered new vigilance from both Japanese and foreign officials, as developed nations seek to devise stronger methods to deter and prevent WMD attacks by non-state actors and terrorist groups.

PANEL SESSION 4:

TECHNOLOGIES AND TECHNIQUES FOR INFORMATION MANAGEMENT IN ARMS CONTROL IMPLEMENTATION

Chair:

Ambassador Lynn M. Hansen
National Intelligence Council

Ms. Mary Margaret Evans
Arms Control Implementation and Compliance, Office of the Secretary of Defense

Mr. John A. Lauder
Arms Control Intelligence Staff

Ms. Lori Alemanno Testa
NATO Verification Implementation Coordination Section

Dr. Ralph W. Alewine III
Nuclear and Chemical and Biological Defense Programs, Office of the Secretary of Defense

Successful arms control agreements are only those that can be guaranteed by verification. No amount of good will can substitute for concrete evidence of treaty compliance. Regular exchanges of information between parties to document adherence, including information management, the process that structures the flow of compliance information between parties, is a vital component of arms control agreements. Information management organizes disparate monitoring problems into easier to manage pieces, enables parties to demonstrate compliance, creates transparency between parties, and builds confidence between them. In short, information management is the vital force that holds agreements together once they have been signed and delivered by the diplomats. It becomes all the more important once one considers the increased number of arms agreements and signatories in the post-Cold War international system.

Today, with an increased threat of weapons proliferation and a burgeoning emphasis on multilateral regimes, arms control agreements are becoming even

more commonplace. Fortunately, the rapid rate of technological progress combined with the declining cost of global communications will allow information managers to keep pace with increased burdens. Given the importance of information systems in ensuring the upkeep of agreements, information managers must be included in the negotiations to formulate information systems prior to the completion of the agreements. The centrality of information management and in-depth illustrations of how it operates are the two issues that concerned this panel most.

Importance of Information Management

Arms control agreements create norms and rules of behavior between countries. A world of complete trust is a world without agreements, but the international system is primarily decentralized and fragmented; thus, agreements between countries impose rules which, in turn, enhance the security of those involved. Information systems are a means by which parties verify compliance and are key to reducing fundamental suspicions and apprehensions

between parties. They accomplish this by allowing for information exchange to monitor compliance, thus encouraging dialogue and building confidence. There is no such thing as too much information, because more data impose consistency and make disinformation difficult.

The strict bipolar international order has been lifted and so, too, the tight control of weapons of mass destruction (WMD). Since the end of the Cold War, the prevention of WMD proliferation has become the greatest challenge for global security. Not surprisingly, the number of arms control agreements has increased. Prior to the end of the Cold War, the United States, for example, reported on five arms control agreements. Today, the United States reports on fifteen separate agreements with over 250 specific formats on verification and compliance. The number of arms control agreements will continue to rise, and with it the demands on information managers as the need for information exchange increases. Several additional agreements currently under negotiation demonstrate the global trend toward controlling arms proliferation. These include the Chemical Weapons Convention, Comprehensive Test Ban Treaty (CTBT), Land Mine Control Program, Wassenaar Arrangement, Declaration of Santiago on Confidence and Security Building Measures (CSBMs), and CSBMs under the Biological Weapons Convention.

Not only has the number of agreements increased, but the nature of agreements has dramatically changed. In the past, treaties such as the Strategic Arms Limitation Treaty (SALT) I and SALT II were ambiguous and open to varied interpretations. The pendulum has swung in the other direction. Treaties such as the Conventional Forces in Europe (CFE) Treaty are detailed, tightly worded, and leave little to the imagination. This requires increased involvement from information system

managers to organize data and minimize the potential of misinterpretation.

Given current trends, developers of information systems must design systems which recognize the needs of the users. This can be particularly challenging for information managers, because needs vary from user to user. From the CTBT negotiations it is clear that not all of the signatories will care about the minute details of verification. Developing countries will not be nearly as interested in compliance as, say, status quo powers such as the United States, and will not be as active as the United States in the verification process. The systems must be easy to operate and must make sense to the users. Information managers should provide technical training and software if necessary. One way to simplify the system is to use commonly known commercial software such as Windows-type programs. As questions and anomalies occur frequently, the platform upon which information exchange occurs must be simple for all involved.

Arms control agreements are complicated and detailed, and discrepancies and misperceptions are common. As an example, several years ago the United States inaccurately reported the number of a certain type of equipment that was exported to Turkey. There was not any malice on the part of the United States, but the information management process was not in place, and accuracy suffered. With an information system that is workable and easy to understand and maneuver, problems that arise between users can be readily resolved.

In order to facilitate the easy transfer of information, participants should agree upon verification and information systems prior to the completion of the negotiations. Technical advisors should draw upon prior experiences to avoid errors. Furthermore, to ensure the formation of strong informa-

tion compliance systems, agreed to and understood by all, information managers and data experts should attend the negotiations—not to participate in the political aspects of the negotiations, but to sit alongside the negotiators to design efficient systems, in advance of signing any agreement, that all parties agree work best.

In the past, the exclusion of information managers has had negative impacts. During the Open Skies negotiations, questions of information exchange formats were not adequately addressed. The treaty was signed, but quickly faltered due to shortcomings in information exchange. As a result, technicians had to revamp the entire system to keep it from falling apart. Finally, the inclusion of information managers makes sense because, in effect, they are the ones who implement many components of the treaties.

Recent Examples of Successful Information Management Systems

The current CTBT talks illustrate the benefits of including information managers in the negotiating process. Architects of that information exchange system successfully overcame the hurdles of cost versus effectiveness, transparency of processes versus protection of information, openness of data versus data security, dedicated data exchange links versus commercial networks, standard data products versus customized data products, skilled end-users versus unskilled end-users, and provision of answers versus provision of data. Technicians decided on a low-cost, simple-to-use, open verification system that provides numerous levels of analysis and detail depending on the needs and technical skill of the user.

The CTBT system relies upon a global communications network. Computers compile raw data provided by globally-distributed seismic, hydroacoustic, infra-

sound, and radionuclide sensors to determine compliance by CTBT signatories. Data are processed by a combination of automated and interactive analyses to produce refined information. Data are then disseminated on-line via global networks such as the Internet, or on electronic messages, file transfers, or through physical distribution on paper, magnetic tape, or CD-ROM. The system offers raw data such as authenticated wave-forms and spectra as received from network stations, as well as synthesized results (called Executive Products). In addition, it can provide (1) computer-generated illustrations of measured parameters that characterize detected signals, (2) bulletins of detected signals and measured parameters associated with located events, and (3) maps of located events. R&D costs for the CTBT system are estimated at \$50 million, and annual operating costs are estimated to be \$26 million, 25 percent of which would be paid for by the U.S. government.

Designing NATO's information management system, a database arms control information system called VERITY, was a success of a different sort. The prospects of intra-NATO bickering was a concern. Country representatives could have pushed for solutions through the prisms of their own individual interests. Basic questions such as the language to be used, types of equipment to be bought, and monetary commitments can all too easily become fodder for political quarrels. However, NATO used a multinational staff, which reduced the likelihood of debate. The Verification, Implementation and Coordination Staff (VICS), a NATO working group under the Verification Coordinating Committee (VCC), is made up of a multinational mix of civilian and military officials. The function of the staff is to report on the CFE Treaty, to support the Dayton Peace Agreement, and to provide administrative and operational assistance to the VCC. In addition, the staff advises the VCC on

technical matters concerning VERITY and provides VERITY training seminars regularly. For VERITY, the staff decided upon one common language, English; universal information requirements with data dictionary; a single engineering approach; and a standardized method of approval, progress monitoring, and configuration management. Its total cost was \$500,000.

VERITY is an unclassified, operational tool available to all CFE signatories. It provides annual information exchange, notifies current force structure, disseminates inspection reports, and provides a forum for communication and dialogue between subscribers via electronic mail (e-mail). VERITY is in operation 24-hours a day and contains up-to-date information. Verification units of the OSCE can connect to the databases and perform day-to-day operations. Twenty-five nations, including not only NATO members but also cooperating partners of the former Soviet bloc, subscribe to VERITY. Overall, VERITY is an arms control verification tool, and because it is not a legally binding tool it is also a practical means of communication and openness between users.

Summary

Today, arms control treaties are more prevalent and more complicated than in the past. With this in mind, it is all the more important for the diplomats to coordinate closely with information managers to design verification systems that work best. The most logical method to accomplish this is to include system designers in the negotiation process to ensure that signatories get the best system for their needs. Ideally, the systems should be easy to use and should provide the same information for all. The CTBT and VERITY models demonstrate the advantages of close coordination and good communication between the system designers and the end-users.

SUMMARY OF FEATURED PRESENTATIONS:

U.S. AND RUSSIAN PERSPECTIVES ON THE COOPERATIVE THREAT REDUCTION PROGRAM

The Honorable Harold P. Smith, Jr.

Assistant to the Secretary of Defense for
Nuclear and Chemical and Biological
Defense Programs

Colonel General Evgeniy P. Maslin

Chief of Directorate, Ministry of Defense,
Russian Federation

U.S. Perspectives on Cooperative Threat Reduction

The Cooperative Threat Reduction (CTR) program represents an unprecedented shift in the U.S.-Russian arms control relationship. U.S. and Russian goals have moved from limitation to elimination of many of the weapons of mass destruction. Ukraine, for example, recently became the latest non-nuclear-weapon country thanks to CTR. Ukraine followed behind Kazakhstan, which last year shipped the last of its nuclear warheads to Russia. Belarus should complete its denuclearization program by October 1996.

CTR is the culmination of many individual efforts. Special recognition goes to Senators Sam Nunn and Richard Lugar, who provided the impetus for CTR. Their foresight and wisdom have been affirmed overseas. Joachim Krause of the Research Institute of the German Society for Foreign Affairs said recently, "I wish we had at least one single parliament in Europe which would show the same degree of international responsibility as the U.S. Congress did in this field—and I wish we had parliamentarians such as Senators Nunn and Lugar, who made such concerns a matter of priority."

Secretary of Defense William Perry has made implementation of CTR a top

priority and has devoted a great amount of time and energy to convincing the republics of the former Soviet Union that they would be better off nuclear-free. In addition, General Maslin has enabled CTR to succeed because he understands the significance of disarmament. His accomplishments in connection with missile dismantlement—which exceeds the U.S. rate—illustrate his complete commitment and dedication to making the world a safer place.

The CTR program can be understood in three phases. The first phase is known as the "hardware store" phase in which the United States asked Russia, "What is it you need?" Whatever it takes—from mundane supplies such as fences to complicated computerized security systems and portal monitoring—the United States has sought to provide on every level. The equipment has arrived, and U.S. audits and inspections have demonstrated that all equipment has been accounted for and is being used as intended. The second phase has centered on joint development of requirements and prioritization of equipment to be used. The third phase—the focus of current joint U.S.-Russian efforts—involves U.S. contractors and Russian subcontractors working together to fulfill CTR goals of dismantlement, transfer, and safe storage of nuclear warheads. The work has proceeded at an extremely

rapid pace. The Russian and American teams have worked extraordinarily well together.

Some small glitches have accompanied the implementation of CTR. In one recent case, the former KGB (currently the Federal Security Force) has not allowed U.S. contractors onto a certain site for fear of compromising Russian security. The contractors have returned to Moscow in compliance with Russia's request to leave the site, but this impasse must be resolved to continue U.S.-Russian efforts. Bureaucratic hold-ups have been resolved smoothly in the past, and it is expected that this latest one will as well.

All projects will continue to go forward—propelled by a confluence of vision between East and West.

Russian Perspectives on Cooperative Threat Reduction

The CTR program illustrates the increase in trust and confidence between the United States and Russia. By the start of the next century, almost three-fourths of the combined U.S. and Russian nuclear arsenals will be eliminated, as outlined in treaties such as START I and II. Russia is fulfilling its treaty obligations, despite the enormous domestic socioeconomic shifts. Since the end of the Cold War, thousands of nuclear weapons have been removed from the former Warsaw Pact countries and the former Soviet Republic territories. In the last three years, 3,500 nuclear warheads have been removed from Ukraine, including approximately 2,000 tactical nuclear warheads. Since 1991, Russia has eliminated half of the nuclear warheads in its tactical weapon and air defense systems, and has reduced by one-third its tactical sea-based complexes.

Changes within Russia have had far-reaching repercussions throughout the country that go beyond simple economics. First, there have been serious problems in providing safe and secure storage for the nuclear weapons. Worsening conditions in specialized railroad supercontainers, along with the decline in rail lines, have increased the potential for transport accidents and speak to the need for Russia to acquire outside technical equipment that can rectify these internal hurdles. Secondly, as a result of increased criminal activity, Russia also faces the possibility of theft of nuclear arms and components. Russia must be able to guarantee the safe storage of its weapons in order to prevent them from falling into the wrong hands. Finally, the Russian government must help military personnel previously involved in weapons maintenance and development find new jobs and create new lives for themselves. Assistance from the United States under the CTR program has been extremely helpful in addressing these challenges. The value of the assistance is not in its dollar amount, but in its timeliness.

CTR is not simply a U.S. gift to the former Soviet Union; U.S. national security and economic interests also benefit from this program. It is beneficial for Russia too, since it decreases the financial burden on the Russian military budget while increasing the security of the Russian state. The number of nuclear storage facilities and the number of military personnel in Russia have declined to one-third of what they were in 1991. The disarmament process in Russia is irreversible. Together, the United States and Russia will complete START I and II, and they will be followed, some day, by a START III.

PLENARY SESSION II:

NUCLEAR TESTING AND A COMPREHENSIVE TEST BAN: TECHNICAL AND SECURITY ISSUES

Chair:

Admiral Henry G. Chiles, Jr.
U.S. Navy (Retired)

Ambassador Thomas Graham, Jr.
Arms Control and Disarmament Agency

Dr. Larry S. Turnbull, Jr.
Arms Control Intelligence Staff

Dr. Tian Dongfeng
Institute of Applied Physics (Beijing)

The Honorable Victor H. Reis
Department of Energy

Ms. Laurence Marie Nardon
Foundation for Defense Studies (Paris)

As became clear in this plenary session, the Comprehensive Test Ban Treaty (CTBT) serves as a microcosm of the issues and challenges facing all regimes for controlling arms. The prolonged CTBT negotiations and the draft treaty bear on a panoply of political issues and technical disciplines, including linkages with other regimes, especially the Nuclear Non-Proliferation Treaty (NPT); tension between arms control, on the one hand, and maintenance of a military and deterrent capability, on the other; an array of technical issues related to compliance monitoring and verification; and, finally, the question of peaceful nuclear explosions versus military testing. The significance of each issue varies from country to country, but as this plenary session demonstrated, almost all face political and technical dilemmas and challenges as the world embarks on the no-testing phase of the nuclear era.

A U.S. Military Perspective on CTBT

There has been rapid movement toward denuclearization in the U.S. mili-

tary. Strategic nuclear weapons have been detargeted, and the Strategic Arms Reduction Treaty (START) I has been implemented. In less than two years, the U.S. government has completed its START I requirements by 90% (and the Russian government by more than 80%). START II was signed in 1993 and ratified by the U.S. Senate this past year. As prescribed in the 1994 U.S. Defense Department's internal Nuclear Posture Review, 22% of the ballistic submarine force, 30% of the B-52 bombers, and 100% of the B-1B bombers will be removed. In addition, the U.S. military will remove tactical nuclear weapons from all surface Navy vessels.

The U.S. nuclear stockpile must be safe and reliable, and it must maintain the confidence of both those who might be required to use it, and, just as importantly, it must restrain those against whom it might be directed; this is the essence of deterrence. In these days of a shrinking stockpile, the reliability issue becomes even more important, because what were once small problems might have a greater relative effect. Once the CTBT enters into

force, the military—the customer of the nuclear weapons development and acquisition complex—must safeguard and verify the operational standards of the stockpile without testing. In order to do this, the military must be an even smarter customer than previously and must ask the right questions. The Department of Energy needs to support and sustain a science-based stockpile stewardship program to ensure reliability and confidence, and the military needs to understand, even better than before, the procedures that comprise this program and the significance of the results.

Background on a CTBT

CTBT, while sharing many issues and technical problems with other arms control regimes, also has its differences. Unlike most other arms control agreements, CTBT does not directly limit or reduce military forces. Instead, it prohibits a specific weapons-development activity.

The pursuit of a comprehensive test ban is one of the oldest arms control objectives of the nuclear age. The quest, which predates all existing arms control agreements, began in the 1950s with the informal testing moratorium, which was undertaken in 1958 only to collapse in 1961. By the early 1990s, the five nuclear-weapon states had conducted almost 2,000 tests, with the United States conducting over half.

In today's multipolar environment, continued nuclear testing reduces rather than enhances security because it undermines efforts to strengthen the nuclear nonproliferation regime. In 1993, the U.S. government supported the continuation of the existing testing moratorium and the prompt negotiation of a CTBT. In the context of a sound, science-based stockpile stewardship program, the U.S. government further indicated that it would sup-

port a "zero-yield" CTBT, prohibiting even very small nuclear explosions. Subsequent to the U.S. declaration, the zero-yield concept was endorsed by the United Kingdom, France, and Russia. [Editor's Note: China announced its intention to support the zero-yield policy on 6 June 1996 and conducted its last final test on 29 July.]

The CTBT cannot be considered in isolation from the other treaties that constitute the nuclear nonproliferation regime, principally the NPT. Many of the political issues arising out of the CTBT are a result of the NPT and its legal restriction of nuclear-weapons capability to five nuclear-weapon states. Some parties to the CTBT negotiations do not want to strengthen or continue this differentiation between nuclear "haves" and "have-nots."

The Importance of a CTBT to the Nuclear Nonproliferation Regime

The NPT is the principal agreement promoting and supporting nuclear nonproliferation. It prohibits the acquisition of a nuclear-weapons capability by states that had not exploded a nuclear device prior to 1967. The NPT is a horizontal nonproliferation agreement, prohibiting new members to the nuclear club. It does little, however, to limit vertical proliferation. Nuclear-weapon states are legally free to pursue the development of more powerful and advanced weapons.

The NPT is one of arms control's success stories. Before the treaty's entry into force in 1970, many predicted a world of 25 or 30 states with nuclear arsenals by the end of that decade. Today, there might have been as many as 50 or 60 nuclear states, creating unimaginable security risks in which the survival of the world would be a daily question. Thanks largely to the NPT, these dire predictions have been averted, and only some four

states have acquired nuclear weapons since its entry into force.

At the 1995 NPT Review Conference, the states parties extended the treaty indefinitely and without reservation, reaffirming their strong conviction that nuclear nonproliferation remains an enduring international norm. The states parties also adopted a set of principles and objectives for nuclear nonproliferation, nuclear disarmament, and a framework for a strengthened review process. Specifically, the states parties called for the early attainment of a CTBT in 1996.

The CTBT will complement the NPT by adding an important constraint on vertical proliferation. While the CTBT helps in preventing horizontal proliferation, because testing is not necessary to develop a first-generation nuclear weapon (e.g., the Hiroshima bomb design was never tested prior to use), its primary benefit is in constraining vertical proliferation. It will help prevent states from becoming advanced nuclear powers by preventing them from testing in order to gather the data necessary to develop later-generation nuclear weapons.

Unfortunately, the close relationship with the NPT carries with it a major political problem, that of the differentiation between nuclear "haves" and "have-nots." Some countries, such as India, believe that a CTBT will allow nuclear-weapon states to maintain their arsenals, and by creating another formidable barrier to the acquisition of nuclear weapons, will only make the five-member nuclear weapons club a permanent fixture of the international power structure.

This view has been reinforced by the continued testing during the negotiations by two of the five nuclear-weapon states, France and China. Although they both have now ceased testing, some have

feared that these last tests were conducted to support development of a new generation of weapons just prior to completing the CTBT.

Continued Nuclear Testing

During the Cold War, France viewed itself as a maverick within the Western Bloc, dropping out of the NATO integrated command but supporting the United States and Western allies on most major initiatives. France had expressed a willingness to become part of a CTBT, but it was unclear whether France's self-imposed testing moratorium would continue beyond the Mitterand administration.

On 13 June 1995, the newly elected Chirac administration ended the speculation by launching a new campaign of testing. France again demonstrated that it wanted to continue to play the role of maverick in international affairs. Ironically, this testing campaign increased opposition to testing and added momentum to CTBT negotiations.

Following the worldwide uproar over the French nuclear testing campaign, President Chirac, on 10 August 1995, announced that France would support a zero-yield policy for the CTBT. It is unclear whether this current policy includes subcritical hydrodynamic tests.

Aside from the recent testing campaign, however, France has been a firm supporter of other nonproliferation initiatives. It has committed itself to a Fissile Material Cutoff Treaty, closing its two military fissile material production plants. (Like the four other nuclear-weapon states, France will continue producing fissile material for civilian applications and for naval nuclear fuels.) France has also announced that it will close its Pacific Testing Range. France, like the

United States and Britain, has given a negative security assurance that it will not use nuclear weapons against a non-nuclear-weapon state, providing that state is a member of the NPT and is not allied with a nuclear-weapon state.

China, like France, has not joined in the self-imposed testing moratorium. Unlike France, one of China's announced intentions for testing is to develop new generations of weapons. China, which entered the nuclear club late, claims that it would incur a significant security disadvantage vis-à-vis Russia and the United States if it stopped testing without a CTBT in hand.

China diverges from the other nuclear-weapon states on other CTBT issues, notably on the role of peaceful nuclear explosions (PNEs).

CTBT and Peaceful Nuclear Explosions

The question of PNEs is a major problem facing the CTBT. Many arms control agreements have difficulties distinguishing the applications of dual-use technologies. The CTBT is no exception, but the dual-use question here poses some unique challenges.

Although nuclear explosions have primarily been used for military applications, PNEs can serve three primary civil purposes: (1) scientific research (e.g., nuclear physics, astrophysics, and the production of artificial nuclides); (2) commercial purposes (e.g., large excavation projects and increasing the output of oil and natural gas fields); and (3) prevention and/or handling of natural disasters (e.g., curbing the blowouts of oil or gas wells).

While China supports the CTBT, it believes that the peaceful application of nuclear explosions should not be prohibited and cites Article V of the NPT which

states, "each party of the Treaty undertakes to take appropriate measures to ensure that, in accordance with the Treaty, under appropriate international observation and through appropriate international procedures, potential benefits from any peaceful application of nuclear explosions will be made available to non-nuclear-weapon states parties to the treaty on a nondiscriminatory basis."

Both the United States and the Soviet Union have conducted PNEs. China has yet to conduct a PNE, but has done exploratory work on the peaceful applications of nuclear explosions, particularly the production of super-heavy nuclides and artificial diamonds.

Questions remain about distinguishing a PNE from a weapon test and how to make the benefits of PNEs available to non-nuclear-weapon states. Theoretically, PNEs can be designed to disallow the use of monitoring devices that would provide militarily useful information. Standard designs for PNE devices that differ from military designs would also limit the military utility of PNEs. Whether verification provisions can be devised to determine this distinction adequately remains an open question. Also, procedures that allow non-nuclear-weapon states to conduct PNEs would need to be developed. Placing PNE devices under international control or obligating nuclear-weapon states to provide such devices are two options. These questions are significant and create a major obstacle to completion of the CTBT.

[Editor's Note: China's 6 June 1996 announcement to support a zero-yield policy includes PNEs.]

Science-Based Stockpile Stewardship

In July 1993, the United States announced it would continue its morato-

rium on testing. It did not, however, alter any of its requirements for maintaining a robust nuclear stockpile. Deterrence remains the basis of U.S. national security, and in the absence of testing, specific conditions have to be met in order to maintain a safe and reliable stockpile.

To ensure an effective stockpile, defects in the weapons must be discovered and corrected before they cause a safety or reliability problem. U.S. nuclear weapons are designed for a life of 20-25 years. In the past, most weapons were removed from the stockpile before reaching the end of their designed service life. The United States has halted production of nuclear weapons, so a new goal of life extension has been added to the stockpile stewardship program. The U.S. government must assess the safety and reliability of the stockpile and certify that it is operational without testing.

To accomplish this, the U.S. government has announced a Science-Based Stockpile Stewardship program. This program relies on five major elements: (1) assessment and non-explosive testing of weapons and components; (2) maintenance of nuclear laboratory facilities; (3) maintenance of the Nevada Test Site in case problems develop that require testing; (4) adequate verification of the CTBT; and (5) annual recertification of the entire nuclear weapons stockpile.

CTBT Verification

While the technical problems associated with detecting and distinguishing nuclear tests may be unique to the CTBT, the political problems associated with monitoring and verification are not much different from other multilateral regimes. Past attempts at negotiating a CTBT were largely unfeasible because of the difficulties in monitoring and spotting low-yield, evasive testing. Improved seismic moni-

toring capabilities and the political acceptance of on-site inspection in other regimes have paved the way for successful completion of the CTBT. Despite this, problems with verification and monitoring remain.

Monitoring and verification involve risk management; absolute verification is either technically impossible or economically prohibitive. To combat this, a determination needs to be made as to which kinds of cheating are significant, such as testing in the 2-5 kiloton range. There is little consensus on what constitutes significant forms of testing.

The U.S. government and the European states, including the former Soviet Union, are well acquainted with and used to intrusive, on-site inspection. Experience with bilateral nuclear agreements and the Conventional Forces in Europe Treaty has taught them that security concerns can be reconciled with effective on-site verification. This is not universally true, however. Many CTBT signatories have little experience with intrusive arms control monitoring and balk at such an idea.

The distribution of monitoring efforts is also problematic. With NPT monitoring, International Atomic Energy Agency safeguards are equally applied among nuclear facilities in non-nuclear-weapon states. As a result, states like Japan, Germany, and Canada, which do not pose proliferation risks, receive the vast majority of inspections. Meanwhile, inspections in states that pose significant proliferation risks are relatively infrequent.

Finally, mechanisms for resolving ambiguities and false alarms raised by the monitoring system must be developed and implemented. Any seismic monitoring regime, for example, will invariably

result in a significant number of false alarms. Without an accepted method for resolving these ambiguities, the verification regime will come into question.

Summary

Despite the prospect that a zero-yield CTBT will be concluded shortly, several issues still have to be resolved to the mutual satisfaction of the signatories. These issues bear on technical and political concerns and tend to magnify the differences between non-nuclear-weapon and nuclear-weapon states, and even differences within the latter group. The CTBT will complement the NPT's curbs on horizontal proliferation with its own restrictions on vertical proliferation and, therefore, will contribute to global stability and security. In at least the U.S. case, the safety and reliability of the nuclear stockpile and, thus, the robustness of the deterrent will be ensured by application of scientific techniques, careful analysis, monitoring, and certification of the results.

FEATURED ADDRESS TO THE CONFERENCE

by

The Honorable John M. Deutch
Director of Central Intelligence

I'm very pleased to be here this evening at this conference.

The first reason I'm pleased is that I've been a long-time admirer of the work of the Defense Nuclear Agency, its technical capabilities, and its ability to react and apply its talents to the many post-Cold War problems that we face.

I was also especially pleased to come here because I know that several members of the Intelligence Community are participating in this symposium. The last time I had contact with the Defense Nuclear Agency was in the early '70's. It's a great organization, and those of you who are associated with it not only are among the most innovative people in our national security community, but also make a tremendous contribution.

I'm pleased to see this place not only intact, but flourishing. This organization has been responsible, and still is, for our military leaders' stockpile, and this is an organization that had so much to do with forming our understanding of nuclear weapons. You understand the dangers of nuclear weapons, the role they've played in the past, and will play in the future.

This organization has developed technologies and procedures that assure leadership and command and control of nuclear weapons, and innovation from a whole family of advanced conventional weapon systems design. Indeed, I was very pleased to learn about the impending

change in the name of the Agency from the Defense Nuclear Agency to the Defense Special Weapons Agency which I think is proper recognition of the work that's being done now as this organization has effected positive changes for the post-Cold War world.

What I want to do this evening is give you a few thoughts about the proliferation threat, one of the most challenging matters on the agenda—certainly the most challenging matter on the agenda of the Intelligence Community.

Let me start by putting a little bit of structure on the issue of what we in the Intelligence Community see as the proliferation threat. This threat is rather simply described: the proliferation of nuclear, chemical, and biological weapons that may be used intentionally by states and by terrorist organizations. This is the most urgent, long-term pressing intelligence challenge that we face.

The materials and expertise necessary to build chemical and biological weapons are more readily available today than ever before. Nuclear materials and technology are accessible, even though this organization and many others around the world are working to make them less accessible. And, most importantly, the likelihood that state or non-state actors will attempt to use these weapons of mass destruction against United States interests or the interests of our allies, in my judgment, is growing.

Let me begin by spending one moment on an example which I'm sure almost all of you are familiar with, which carries some important lessons. That is the incident a year ago in which the Japanese cult, Aum Shinrikyo, demonstrated to the world how terrorists can put a weapon of mass destruction to use, in this case Sarin nerve agent, in the Tokyo subway system. It killed only 12 people, but as you know it injured about 5,500 people, and a very small quantity of Sarin nerve agent virtually brought Tokyo to a halt. If the agent had been properly developed and dispersed, a great many more people would have died.

This Japanese cult was able to obtain legally all of the components it needed to build a chemical infrastructure and to produce Sarin very easily. The fact that all the components and materials had other legitimate uses means that it is virtually impossible to guarantee that chemical agents, nerve agents, or other toxic chemical agents cannot be used by determined groups or states. A massive infrastructure is not needed.

What I find most interesting is that the order given by the leader of this cult, Asahara, to develop the agent, was only given a year before its use. It took one year from intent to actual execution.

It shows what chemical agents can do—maximum disruption, death—with a small investment in time and resources. I begin with this example because it illustrates the difficulties that we face in countering potential chemical or biological terrorism by non-state as well as state actors.

In my judgment, nuclear weapons are a less likely choice for terrorists. The risks and resources involved in fabricating or stealing a nuclear device are much greater. Still, this is a possibility that we

cannot ignore. As I mentioned, nuclear materials and nuclear technology are more available than ever before. I know from discussions with Russian friends that one of their most serious concerns is the control not only of nuclear weapons, but also nuclear materials and nuclear technology in Russia and from the facilities and the states of the former Soviet Union.

Security at research institutions, where these nuclear materials are stored, is inadequate, and the staff there is poorly paid. Economic deterioration and increasing crime raise the possibility that these nuclear materials will be stolen or sold. That is why the Cooperative Threat Reduction Program, in which so many of you here are involved in cooperation with the Russians and Ukrainians, and Kazakstanis, and others, is so important for preventive defense, so important to the national security of this country. We cannot ignore the problems of nuclear materials and device accountability in the states of the former Soviet Union.

Now I want to stress that we currently have no evidence that any terrorist organization or peripheral organization has obtained contraband nuclear materials of significant quantities. We remain concerned, however, because only a small amount of this material can create tremendous havoc when put into a nuclear device.

I would also like to emphasize the tremendous importance on working, whether we're talking about the Department of Defense or the Intelligence Community or the Department of Energy, in Cooperative Threat Reduction efforts and improving materials controls and accountability—not only in Russia, but in many other countries of the world as well.

Indeed, let me make a few remarks about rogue states. There are at least 20

countries that have or may be developing weapons of mass destruction and ballistic missile delivery systems. We are most concerned about North Korea, Iran, Iraq, Libya, and Syria. All have a broad range of weapons in their arsenal, and these weapons could be provided to terrorists.

Let me just, in a very thumbnail way, go through these countries, North Korea first. It has agreed to freeze plutonium production and to dismantle eventually the plutonium recovery plant and other nuclear facilities. We shall see. But Pyongyang maintains an active chemical weapons program, and despite its signing on to the Biological and Toxic Weapons Convention, it has an active biological weapons program which is, today, in the early stages of research and development.

North Korea evidently is investing heavily in developing ballistic missiles and could deliver these weapons, these missile systems, to the Middle East quite shortly, and elsewhere, giving countries the capability of delivering explosives and toxic agents, whether nuclear, chemical or biological, through these ballistic missile delivery systems.

Iran could produce a nuclear weapon by the end of the decade with foreign assistance. It also places large sums of money in its chemical weapons program, and Iran's biological program got off early in the '80s and is now in the latter stages of development.

Iraq has the expertise, hidden components, and a leadership, as we have seen, willing to resume chemical, biological, and nuclear, and long-range missile production when sanctions are eased. It has also demonstrated the capability to deceive international inspectors.

Libya has a nascent nuclear/biological program, but currently we are most con-

cerned about its chemical program, specifically, the massive underground facility that has the potential for chemical agent production under construction in the mountains near Terhunah. This facility, in my judgment, represents one of the great challenges of our determination to deal successfully, all the way to conclusion, with a willful proliferator of a weapon of mass destruction, in this case Libya. I was most delighted to see the remarks of my colleague and friend and former boss, Bill Perry, in Cairo saying that the United States does not have the intention of seeing that facility ever operating.

Finally, let me note, Syria has a chemical warfare program which has been active for at least a decade and has considerable capability in a variety of areas.

This is a very broad sketch of some of the challenges that we face. Let me give you some of my own summary judgments about these threats.

First of all, the threat is growing. It's not decreasing, it's increasing.

Second, chemical and biological weapons are a more immediate concern than nuclear.

Third, both national and terrorist actors may seek to use these weapons of mass destruction.

International agreements, in my judgment, will slow but will not stop the transfer of relevant materials and technology. And as I've said, the nations of greatest concern to the international community are Iraq, Iran, Syria, North Korea, and Libya.

What does this mean for the Intelligence Community? First of all, we are placing the highest priority on gathering

timely intelligence to provide accurate and objective information for our senior policymakers.

Second, we intend to support diplomatic, covert action, and if necessary, military actions, to meet these threats.

Third, when the threat involves United States citizens or the interests of the United States, the Intelligence Community will support the efforts of our law enforcement community, particularly the FBI, to combat threats against Americans abroad or Americans here in the United States. So a very important priority for me is to see the Intelligence Community—not only in this area of counterproliferation, but also in the areas of terrorism, drug trafficking, and organized crime—provide greater support to the law enforcement community.

We are obviously going to continue to work very closely with the Department of Defense and the Defense Nuclear Agency, the Department of Energy, and the Department of Energy Laboratories, by developing technology that bears on all aspects of this proliferation problem.

Let me just conclude by saying that at the beginning of my remarks I used the example of Aum Shinrikyo to illustrate the difficulties that we face in countering potential NBC attack by terrorists. I am impressed by the tremendous work that's gone on not only by the Intelligence Community but by our entire government in collaboration with other governments, many of whom are represented here, and with international bodies to face the character of this threat and to put us in as good a position as possible to combat them, to deter them, and to meet them should we need to do so. I'm sure that we'll be able to meet these challenges as we continue to work together. At the heart of this effort are individuals like you,

working with agencies like the Defense Special Weapons Agency, to ensure that we understand the policy measures that require cooperation with our allies and with others to work on these problems, and to provide sound technical solutions to these very urgent, national problems.

Thank you all very much. Thank you.

PANEL SESSION 5:
EXPORT CONTROL:
ROLES, PROBLEMS, AND PROMISE

Chair:

Mr. Paul W. D. Hatt
Ministry of Defense, United Kingdom

Dr. Gary K. Bertsch
Center for International Trade and
Security, University of Georgia

Dr. Viktor I. Mizin
Ministry of Foreign Affairs,
Russian Federation

Mr. Ye Ru'An
Embassy of the People's Republic of
China (Washington)

Colonel Steve Boyce, USAF
Defense Technology Security
Administration

Export controls can be difficult to implement and maintain, but they can also be extremely rewarding because of the opportunities they present to stem supply-side proliferation and, thus, build a safer world. Two approaches can be taken toward evaluating export control measures—theoretical and practical. The theoretical approach can be divided into three issue areas in terms of the extent to which (1) export controls act as constraints or channels for trade, (2) regimes are discriminatory, and (3) export control regimes are bureaucratically demanding both internally and externally. The practical approach can be similarly divided into issue areas: (1) membership of countries suspected of cheating, (2) information sharing, (3) transparency, (4) the relationship between national and international export controls, and (5) attaching a legal basis to export control regimes.

Overview of Export Control Regimes

Export controls are important because they provide norms, laws, and regulations that help deny proscribed items to undesirable end-users; they serve as a critical

component of a multifaceted nonproliferation strategy, helping nonproliferation policies without unnecessarily obstructing export trade or unduly impeding legitimate trade; and they require national implementation and international cooperation, both of which require a great deal of consultation. In general, export controls are necessary because the following conditions exist and are expected to persist: (1) the demand for weapons and related technologies and materials, (2) states and enterprises producing weapons and related technologies and materials that need to be controlled, and (3) economic pressures to export weapons and materials for monetary benefit. Some possible strategic objectives for export controls would be to establish effective controls within all weapons-producing and exporting states and to ensure adherence to multilateral export control regimes. In the long run, successful companies have realized that their prospects for success are better if they adhere to existing export control measures.

Both the global nuclear experience and the overall Cold War experience can

be seen as export control successes, while Iraq in the 1980s, the former Soviet Union in the 1990s, and potentially the United States and China in the next decade can be seen as possible failures. While not all export control systems may be effective, the current U.S. system demonstrates many of the qualities of a good system, as it has a national control policy and implementation process, a reasonably high level of cooperation between government and business, compliance by business, and is actively involved in international cooperative efforts.

The export control regimes in two strategically significant countries—Russia and China—serve as useful examples of general successes and failures with such regimes. The current environment in Russia calls for strong export control measures. The country has a dangerous surplus of weapons and weapon making potential, political instability and economic change raising proliferation concerns, widespread crime and corruption, defense conversion moving much more slowly than desired, and tremendous pressures to export weapons and materials for much-needed hard currency.

Even in this environment, Russia has had some clear successes with its export control regime: a well-developed system of decrees, lists, and agencies; harmonized lists with international control regimes; leaders that recognize the importance of export controls; and increasing attention to export control challenges and opportunities. There are, however, many obstacles to be overcome: Russia has no comprehensive export control law; export controls are subject to continuous re-vamping and interagency feuding; the relevant agencies are severely underfinanced and understaffed; there is insufficient transparency and widespread corruption; an inadequate culture of nonproliferation still exists among exporters; and

Russia's borders are too porous, with inadequate customs and border controls.

When examining China's current environment for export controls, these factors must be taken into consideration: The country is experiencing rapid economic growth, not all under the control of the central authorities; China is in the process of modernizing its military, increasing its capabilities for force projection purposes; there are increasing tensions with Japan, Taiwan, and the United States on a variety of issues; China is moving toward closer cooperation with Russia on security issues; and the country is now dominated by succession politics. Even in this environment, however, China is still abiding by the Nuclear Non-Proliferation Treaty (NPT), nominally adhering to the Missile Technology Control Regime (MTCR), considering joining the Australia Group, and maintaining rudimentary export control structures. A window of opportunity now exists to gain greater adherence to export controls there, particularly as the central government attempts to regain control over the economy.

Unfortunately, there are still many challenges to be overcome, since China lacks an export control system which is complementary to Western regimes; continues to view export control arrangements as "unfair"; continues to supply Pakistan, Iran, and others with sensitive technologies; has enacted economic reforms which have brought the country's defense enterprises closer to export markets; and continues to have exporters of sensitive items affiliated with the highest levels of its government.

Based on the current status of export control regimes throughout the world, there are a few recommendations which, if enacted, could greatly improve the prospects for these regimes in the future. First, Western governments should expe-

dite export control assistance measures such as the U.S. Nunn-Lugar program. Second, international businesses should provide assistance regarding internal compliance, export control ethics and principles, and other problem areas. Third, and finally, international non-governmental organizations should expand export control education, research, and assistance programs. Not only do export controls serve as important nonproliferation tools, but as companies continue to privatize throughout the world, there is an increasing need for export controls, and these controls will be of increasing importance in the next century.

Russian Export Control Regimes

Following the 1991 coup attempt and the end of the Coordinating Committee for Multilateral Export Control (COCOM) restrictions, the major concern of the broad export control community was the future of the former Soviet Union's "special" weapons. To date, Russia has been extremely pleased with the results. Adequate controls have been enacted through the new export control system that was created in the 1991-92 time frame, replacing the department in the State Planning Committee that had ensured export control measures under communism. In addition, an interagency consultative commission has been established with high-level (deputy ministerial) representation from each of the agencies involved in export controls.

In general, Russian export controls are introduced by presidential decrees or orders rather than by parliamentary initiative. This situation did not change with the adoption of the Russian constitution in 1993 and is unlikely to change after the June 1996 presidential elections.

The Russian government knows that export controls serve as a powerful non-

proliferation tool and supports them at the highest levels. The government has not, however, been satisfied with all export control regimes and has, in fact, had particular difficulties with restrictions under the MTCR. Despite what some factors may indicate, Russia does not really have porous borders to contend with in its efforts to enact export control measures; its borders are actually very tightly controlled, although its customs offices are in need of equipment and personnel, along with a higher level of international cooperation. Russia does not have any strong enforcement problems with its export controls; the lack of money and potential spillover of technologies to other countries do not pose any major difficulties. Except for some minor problems, Russia generally has effective export control measures. With regard to a post-COCOM export control regime, Russia supports the need for an international, mutually agreed-upon organization; however, its need for hard currency must be taken into consideration.

To be successful, Russia must continue cooperating with its Western partners on efforts such as the Nunn-Lugar program; educate its manufacturers on export control requirements; build up its capabilities and personnel; understand that it is no longer dealing with state control but is instead faced with gaining the cooperation of independent companies; strike a balance between a benign sense of protection, helping third world nations develop, exploring outer space, and other arenas; and fight corruption in export control agencies.

Chinese Export Control Regimes

China is a nuclear-weapon state with a very limited number of such weapons. It does not produce or possess chemical weapons but has a massive chemical industry. China maintains a large standing

army but a very low level of defense spending, and exports a marginal volume of conventional weapons and equipment.

China acceded to the NPT in 1992 and supports the three major goals of the Treaty: (1) preventing the spread of nuclear weapons; (2) accelerating nuclear disarmament; and (3) promoting international cooperation in the peaceful use of nuclear energy. While China does not support, encourage, or engage in the proliferation of nuclear weapons, it strongly supports countries' rights and interests in the development of "peaceful nuclear energy." China has signed government-to-government agreements on the peaceful use of and cooperation in nuclear energy with 14 countries, including the United States, UK, Japan, Brazil, Pakistan, and Iran. It exports nuclear materials to the United States, Germany, France, and Canada, and imports advanced nuclear technologies and equipment.

China voluntarily submits some of its civilian nuclear facilities to International Atomic Energy Agency (IAEA) safeguards and has, in fact, established a control regime over the nuclear materials under IAEA safeguards. Over the past decade, China has strictly discharged every obligation under this control regime and has fully cooperated with the IAEA's safeguards. In the area of exporting nuclear materials and technologies, the Chinese government adheres to three guiding principles: (1) exclusively for peaceful purposes, (2) submission to the relevant IAEA safeguards, and (3) no transfer to any third country without China's permission.

China actively participated in the negotiations within the Conference on Disarmament in Geneva for the Chemical Weapons Convention and was part of the first group of countries to sign onto the Convention in January 1993. While China

has consistently supported complete prohibition and destruction of chemical weapons and their production facilities, it does not support hampering the import and export of chemicals for civilian use or disrupting international scientific and technological exchanges and cooperation in the chemical industry for peaceful purposes.

With regard to conventional arms sales, China did not engage in weapons export trade until the early 1980s. Records indicate that China's conventional arms sales represent only a fraction of those conducted by the major suppliers such as the United States, France, Russia, the UK, and Germany. China also participates in the UN Register of Conventional Arms transfers and adheres to a specific set of principles with regard to its conventional arms sales: the export of such weapons should help the recipient nation increase its appropriate defense capability; the transfer must not impair peace and stability in a regional or global sense; such trade must not be used to interfere in the internal affairs of a recipient sovereign state.

China's oversight body for enforcing nuclear, chemical, and conventional export controls is the State Administrative Committee on Military Products Trade. This body falls under both the State Council and the Party Central Military Commission. It consists of high-level officials from the Ministry of Foreign Affairs, the People's Liberation Army General Staff Headquarters, the Commission on Science Technology and Industry for National Defense, the Ministry of Foreign Trade and Economic Cooperation, and other relevant bodies. Government agencies and companies that are engaged in such transfers must be authorized, registered, and approved by the government. Illegal transfers are subject to severe punishment.

China is relatively new to the arms control, disarmament, and export control arenas. It still needs to draft specific laws for export controls, and currently has policies but no laws. The policies of the Chinese government regarding export controls can still be improved upon at the national, provincial, and local levels. In general, the Chinese central government is paying increasing attention to regulations governing exports as part of its continuing national security policy focus on domestic economic development; further development is dependent upon a long-term international and regional environment of peace and stability.

UK Export Control Regimes

The UK government takes export controls very seriously. It has been a founding member of every existing export control regime, including the Wassenaar Arrangement. In general, the UK sees export controls as useful tools. It is, however, concerned about expectations being too high, since these controls take a great deal of time and energy to implement and can be a great cause of disputes between allies. Commercial realities also concern the UK, since the scope of these controls for inhibiting trade can be seen as too high and, therefore, possibly ignored. In addition, there is a definite need to ensure that existing export control regimes stay relevant by being updated regularly; in fact, one of the results of the recently-concluded Scott Commission study was that the UK's export control system needs to be updated. This points to the requirement for sufficient high-level attention to be given to export control regimes on a regular basis.

An Overview of the Wassenaar Arrangement

The United States government thinks the Wassenaar Arrangement (the newest

export control regime) is important because there is currently a wide area not being protected by any control measures—conventional arms and dual-use technology transfers. While valuable, this regime will be extremely difficult and challenging to establish for a number of reasons. First, while weapons of mass destruction are inherently threatening and destabilizing and, therefore, fairly straightforward to control, dual-use technologies are legitimate articles of trade, making them much more difficult to control. Second, dual-use technology transfers are not front page news, so it is a challenge to get the relevant parties to focus on the issues involved. Third and finally, the money which results from conventional and dual-use technology transfers is badly needed by most of the countries trading them.

There are important differences between COCOM and the Wassenaar Arrangement. First, COCOM was clearly an East-West regime, while Wassenaar is truly global. Second, while COCOM had very strict authorities (like veto authority), Wassenaar depends on national discretion. Finally, while COCOM was limited in membership, Wassenaar is open to all nations capable of meeting the basic criteria.

The Wassenaar Arrangement consists of three major elements: lists, consultations, and information sharing. Goods, technologies, and conventional materials of concern are to be listed out for information purposes only in either a Munitions List or a Dual-Use List. These lists, which are still in the process of being developed, will define the security concerns. Although the United States hoped for stricter reporting on these lists than that required for the UN Register on Conventional Arms, agreement has only been reached on after-the-fact reporting twice a year for conventional arms transfers and aggregate after-the-fact reporting and in-

dividual reporting of denials for dual-use technology transfers. While these measures are considered quite modest, they represent a good starting point by providing for some level of transparency.

The principle of the consultations element is that by holding meetings to identify dangerous trends and possible measures to address and rectify those situations, along with non-member problems, common export control policies will be promoted.

Information sharing has been the most problematic element to date, owing to the difficulty in reaching consensus on the level of information to share. Nonetheless, agreement has been reached to begin in a modest fashion without eliminating the possibility of information sharing becoming more robust with time. All three elements must function correctly if Wassenaar is to be effective.

The Wassenaar regime, which was officially inaugurated in December 1995, has made great strides in recent months. Thirty-one nations are now members. A Permanent Secretariat has been established in Vienna. The first plenary meeting was held in April 1996, followed up by a continuation meeting in July. In general, although there are still a number of sticking points to be overcome, the United States is very optimistic about the future of the Wassenaar Arrangement.

Summary

Export controls are necessary because of the continuing demand for weapons and related technologies and materials; state and private enterprise production of weapons and related technologies and materials requiring controls; and economic pressures to export weapons and materials for monetary benefit. Export control regimes contribute to building a

safer world by providing norms, laws, and regulations that help deny proscribed items to potentially troublesome end-users; serving as critical components of a multifaceted nonproliferation strategy; and requiring both national implementation and international cooperation. The export control regimes in strategically significant countries such as Russia, China, and the UK serve as useful examples of the strengths and weaknesses inherent in the implementation of such regimes.

Export controls are going to be of increasing importance in the next century as companies continue to privatize throughout the world and as proliferation concerns continue to gain importance and prominence in the United States and other powers' national security interests.

PANEL SESSION 6:

USING MILITARY MEANS TO CONTROL ARMS AND TO COUNTER PROLIFERATION

Chair:

Ambassador Robert G. Joseph

Counterproliferation Center, National Defense University

General Charles A. Horner

U.S. Air Force (Retired)

Dr. Keith B. Payne

National Institute for Public Policy

Mr. Jerome H. Kahan

Center for Naval Analyses

Dr. Brad Roberts

Institute for Defense Analyses

Colonel Ellen Pawlikowski, USAF

Nuclear and Chemical and Biological Defense Programs, Office of the Secretary of Defense

The challenge of nuclear, biological, and chemical (NBC) weapons proliferation can often be met through preventive means (including export controls and incentives to eschew these weapons); once a state has acquired the weapons, however, responsive means may be necessary. The latter include such instruments as economic sanctions, diplomatic pressures, and, finally, use of military forces to deter, destroy, and defend against a belligerent state or group's potential or real use of these weapons. Panelists discussed how military forces can be used to respond to or counter these emerging threats.

The panel examined a wide array of topics involving the use of military means to control arms, from a mostly U.S. national security perspective. The first presentation focused upon the lessons learned from U.S. involvement in Desert Storm and described how that experience has shaped current U.S. military counterproliferation initiatives. Next, panelists discussed the role the U.S. military plays in support of regional deterrence strategies.

They also explored war termination issues such as those the U.S. military might face in major regional contingencies (MRCs). The final presentation introduced the results of a two-year, joint U.S.-Russian study of U.S. and Russian views on global proliferation and the prospects of future U.S.-Russian cooperation involving proliferation issues, focusing on ballistic missile defense (BMD) cooperation.

Lessons Learned from Desert Storm

The many assessed successes and failures during and after Desert Storm suggest a set of strengths and weaknesses to build upon in preparing for the challenges posed by emerging proliferant states.

Even prior to Iraq's invasion of Kuwait, the international community was aware of extensive NBC programs in Iraq, and some measures were taken to prevent transfers of technologies and expertise associated with these weapons to Iraq. An assessment of Iraq's capabilities conducted by the U.S. gov-

ernment in August 1990, in the wake of the invasion of Kuwait, indicated that in spite of these measures, large stockpiles of chemical and biological weapons, the potential for assembling a nuclear bomb, and a sizable arsenal of ballistic missiles existed.

The U.S. government used the information collected to prepare an offensive air campaign against Iraq. The mission had two goals: (1) to cripple Iraq's weapons programs to the extent possible, and (2) to eject the Iraqi army from Kuwait. Planning guidance ordered immediate strikes of time-sensitive targets, primarily SCUD missiles and launch pads, followed by attacks of the fixed targets associated with research, production, and storage of NBC weapons. Although most attacks were successful, several mistakes and problems also became evident.

The best known shortfall was the inability to preclude or halt Iraqi use of ballistic missiles. The inability to prevent Iraqi SCUD attacks on Israeli and Saudi targets vividly demonstrated U.S. vulnerability in this area. Additional problems included failed bombing attacks on a nuclear research facility and a large uranium mining/processing facility, both due to errors in computing the target coordinates.

Five years after Desert Storm, the United States is still incapable of destroying NBC delivery systems, while technologies in the commercial sector are readily available to potential adversaries to develop relatively advanced delivery systems, such as accurate ballistic missiles and precision guided cruise missiles.

It is imperative that the U.S. government place added emphasis on developing effective air and missile defense capabilities. In addition, the U.S. government must be better equipped to provide collective protection, warning devices, and decontamination capabilities as necessary. Finally, improved intelligence methods (especially human intelli-

gence) are essential in tracking the progress of nations and terrorist groups in their efforts to secure NBC weapons and the means to deliver them.

Defense Counterproliferation Initiative

The lessons learned during and after Desert Storm led the United States to establish new directions and priorities for countering the proliferation threat. At war's end, President Bush announced that countering proliferation had become a national emergency requiring immediate attention. The President, along with the Secretary of Defense and Congress, began a major effort which, under the Clinton Administration, became the Defense Counterproliferation Initiative.

In developing an overall approach to counterproliferation, the Joint Staff circulated a draft plan to the regional U.S. Commanders-in-Chief (CinCs), asking essentially two questions: Where can military force be applied to controlling arms? What are the military needs to counter proliferation?

Based on the responses from the CinCs, the Joint Chiefs devised a multi-tiered approach. With command, control, communication, computers, and intelligence (C⁴I) support and strategic and tactical intelligence as the underlying framework, the various methods for mitigating the threat include proliferation prevention, deterrence, counterforce, and active and passive defenses. The Counterproliferation Initiative focuses on developing the technologies that can meet the challenges posed in each of these categories, with basic goals being prevention and protection.

Technologies currently underway to improve counterforce capabilities include development of improved ground and airborne sensors, enhanced special warheads, agent defeat technologies, PC-based targeting tools, unconventional attack methods, and prompt kill mechanisms that also minimize collateral effects.

Technologies underway to improve active and passive defenses include enhanced early warning capabilities, biological weapons detection and identification, and development of lightweight and low-cost missiles.

Significant effort has also been placed on developing technologies for paramilitary and special operations forces actions. These programs are geared toward the development of unique chemical and biological detection equipment, perimeter monitoring sensors, and technologies for early active denial.

Overall, the U.S. government has redirected its efforts to create a sound counterproliferation policy aimed at prevention and protection. The technologies developed will improve the state of U.S. military preparedness for future needs.

U.S. Regional Deterrence Strategies

Over two dozen countries are known or suspected to have NBC weapons, excluding non-state actors. When countries acquire NBC capabilities, they pose risks to allies and U.S. forces based overseas while elevating the risks to humanitarian concerns in the regions. To deal effectively with the increase in proliferant states, the U.S. government must consider shifting the focus to a regional NBC deterrence policy.

Why is a regional approach to deterrence necessary? Mainly because the proliferants are unique and live in different regions in limited geographic places. The CinCs enable the military to address proliferation issues from a regional perspective, which allows them to play a central role in developing, coordinating, and executing regional deterrence policy.

There are four elements to an effective regional approach. First, it is necessary to adopt a credible stance. A regional counter-NBC stance must be consistent with national proliferation policy and other national or regional interests. A declaratory policy tailored

to that region and to differentiate between nuclear, biological, and chemical weapons (as well as conventional weapons) is essential.

Second, a regional approach requires an analysis of the region and its players to determine a proliferant's perspectives, motivations, and personalities, and how they can be influenced. Tracking NBC programs to include research, development, weaponization, and stockpiling is critical to the profile, as is devising specific military plans and options.

Third, a regional approach requires adequate military capabilities and the strategies to use them. Essential elements of such a strategy include training for NBC warfare, providing a doctrine for fighting in an NBC environment, developing procurement initiatives, and reviewing war plans.

Finally, the establishment of regional coalitions between countries is an important element in developing a concrete regional approach. The development of mutually beneficial relationships with those that have common interests, within and outside a region, is important; however, the U.S. government must keep in mind that it cannot always rely on support from other parties.

In sum, the post-Cold War environment calls for an increased and sustained priority to deter and counter NBC proliferation. The U.S. government cannot rely on deterrence alone, but must also develop and deploy a military capability to deny the enemy the benefits of NBC and missile use. To do this effectively, efforts must continue to shift to the development of regional and regime-specific deterrence strategies that take into account unique political, military, and cultural dynamics.

War Termination Issues Involving Major Regional Contingencies

In assessing the change from a bipolar Cold War environment to a multipolar re-

gional context with an increased potential for use of force, one must not overlook likely roles the United States would play in major regional contingencies (MRCs). Specifically, how will these conflicts involving nuclear, biological, and chemical weapons end? This question can best be addressed by considering three schools of thought:

- Any MRC will be won by the aggressor, whose weapons will deter the United States.
- Any MRC will be won easily by the United States, because the United States has so many advantages.
- The outcome cannot be predicted, because wars gone nuclear move to a political realm.

Each approach abdicates responsibility for thinking through and shaping how wars should end.

To understand the factors which influence the decision-making process in a MRC, an initial look at the wartime calculus must be taken. Both the United States and the aggressor state will be presented with a series of alternatives from which to initiate or reply to actions throughout the course of a war. Aggressors will consider using NBC weapons to attempt to secure a decisive victory, intimidate the United States, or achieve a fait accompli. Once the decision to use such weapons is taken, the United States will reply by disengaging, replying in kind, retaliating with nuclear means, or expanding the aim of the war. The aggressor will then respond by moving toward peace, matching the United States, escalating, or exacting retribution. Each scenario will vary from region to region and with the nature of the aggressor state involved. In short, the outcomes are unpredictable.

Although each case must be evaluated on its own merits and considered in the context of other available options, various factors will influence decisions made by the United States, including level and character of de-

struction, opponent's likely response and potential to inflict destruction, mood of the U.S. public, international political context, congressional debate and action, and judgment of military brinkmanship. Given past approaches to conflicts and wartime situations, the United States is most likely to change the aim of a war and to reply with limited retaliation. Use of overwhelming force, including nuclear reprisal, is not a likely U.S. approach.

The policy community plays a significant role in preparing for future WMD conflicts. The Defense Counterproliferation Initiative, for example, focuses on changing the price of relative alternatives, making it easier for the United States to do what is right and harder for an aggressor to contemplate war.

The United States and potential adversaries face many decisions prior to achieving the termination of a war. These decisions will define both outcomes and consequences, and aim to secure not only victory in war but also peace after war.

Joint U.S.-Russian Study on Proliferation and Ballistic Missile Defense

In an attempt to understand the rationale and mind-set behind each country's approach to proliferation, senior members from the U.S. government and the Russian Federation met to examine the potential for cooperative responses to global WMD proliferation with a special focus on ballistic missile defense (BMD).

The two-year study concerned itself with the following topics:

- U.S. and Russian views on proliferation
- U.S. and Russian views on "tools" for countering proliferation
- The potential for BMD cooperation.

First, the U.S. and Russian teams each presented its own assessment of the proliferation issue. U.S. team members described pro-

liferation as a growing threat. In the near term, proliferation endangered U.S. allies and U.S. troops stationed abroad. In the long term, proliferation posed a threat directly to U.S. borders. The Russians saw the term "threat" as an inappropriate portrayal of the proliferation situation; rather, the Russian team viewed proliferation as a "less-urgent potential problem." The Russian perspective surprised U.S. team members. Originally, U.S. members had assumed that the United States and Russia shared similar views which would culminate in a common response. Indeed, U.S. team members believed that Russia faced a greater threat from proliferation than the United States because Russia is geographically closer to rogue states (e.g., Iran, Iraq, North Korea, Libya, Syria) that could pose the greatest problems.

Russian team members rejected the U.S. epithet "rogue states" too. The Russian government does not identify any states as political threats, Russian team members said. The United States might characterize some countries as "rogues," but to the Russian government these countries are potential clients, potential strategic and/or potential trade partners. These countries were Russia's traditional partners during the Cold War, and forcing Russia to treat them as "rogues" foists asymmetrical costs on Russia. With the economic challenges Russia faces domestically, all outside trade helps, even trade with so-called "rogues."

Furthermore, Russian team members said that casting Iran, Iraq, North Korea, Syria, and Libya as "rogue states" distorts the situation and may become self-fulfilling for the U.S. government. Engagement, not isolation, is a much more constructive policy approach, Russian team members said. The strength of engagement, Russian team members said, can be seen in past diplomatic initiatives such as U.S.-Argentinean negotiations which ended Argentina's Condor missile program and recent U.S.-led negotiations with the North Koreans that culminated in North Korea's coop-

eration over its nuclear facilities. That the Russians offered only examples of successful U.S. diplomatic efforts was not lost on U.S. team members.

Proliferation is a threat to the United States because the latter sends expeditionary forces throughout the world, Russian team members said. The Russian government has no plans to send forces abroad, so the Russians will not be exposed to this threat. In any case, these so-called "rogues," Russian team members said, are useful to the Russian government because they keep the United States in check at no cost to the Russia government.

The greater threat, Russian team members said, arises from U.S. responses which overemphasize military-technical solutions such as BMD technology—the sort of technology that might be targeted against Russian revenue resources. To solve this problem, said Russian team members, would require joint cooperation. It was hardly the type of cooperation the U.S. team had envisioned.

Second, the teams explored counterproliferation tools. U.S. team members said that the U.S. government would rely on all tools—deterrence, defense, and diplomacy. The Russian team reiterated that the U.S. government was too heavily focused on military-technical responses. The Russian team favored, instead, multinational/bilateral control and negotiations, proposing, for example, that all counterproliferation actions be placed under UN auspices.

In anticipation of disagreement over the prospects for cooperation in BMD—the third study topic—the U.S. team assured the Russian team that missile defense would be "counterproliferation oriented" and "limited," would pose no threat to Russian deterrence; and would not violate the Anti-Ballistic Missile (ABM) Treaty; therefore, the U.S. team believed, the Russian government should work with U.S. technologists in developing BMD.

Once again, Russian team members, based on the following arguments, rejected the U.S. view: (1) as previously stated, Russia sees no threat, (2) Russia already has a defense system and cannot afford to build more, and (3) there is no way to guarantee that the nature of a missile defense strategy will not become overly robust so that eventually it *will* pose a threat to Russian security interests. The Russians continued by saying that to engage in cooperation in this area simply licenses the U.S. government to move ahead in an area in which the Russian government has few resources and no money to contribute. In addition, the Russian team felt that the U.S. government would not pursue any missile defense program that would cause the United States to jeopardize the ABM Treaty, despite declarations to the contrary from members of the U.S. Congress.

Russian team members proposed, however, joint programs with the United States for some early warning and theater missile defense (TMD) development, in addition to a return to discussions which enhance mutual understanding. The two teams agreed that limited BMD is not a threat to deterrence and that there is a shared desire to cooperate and to strengthen and expand the Missile Technology Control Regime, International Atomic Energy Agency, and other multilateral fora.

The U.S. team reached the following conclusions: (1) There is much less intellectual commonality than originally imagined. (2) The Russian government regards U.S. views on missile defense and counterproliferation with distrust and skepticism. (3) Cooperation on missile defense is conceivable but would require considerable U.S. reassurance.

The Russian team concluded: (1) U.S. views on "proliferation threats" are alarm-

ist and largely groundless. (2) U.S. intentions may be interpreted as benign or cynical. (3) U.S. responses overemphasize military-technical solutions which might be aimed at potential partners. (4) The U.S. trend is toward missile defense, and deployment is simply a matter of time. (5) Cooperation between the United States and Russia is possible, but it must include broader approaches in a multilateral context.

As a yet-to-be completed task, the U.S. team invited the Russian team to elaborate on reassurance measures and on possible future joint efforts. The Russian team has accepted the U.S. offer.

Summary

Despite the many complications and political sensitivities associated with the use of military force, in some cases it may be the only way to protect security interests and prevent or respond to proliferation in the post-Cold War environment. Panelists reiterated that it is incumbent upon the U.S. government to continue to acquire the capabilities necessary to deter and defend against the NBC-armed adversary, to focus on developing regional deterrence and defense strategies, and to forge ahead on cooperation with nuclear states such as Russia. An approach based on these precepts will strengthen U.S. national security in today's uncertain global security environment.

ROUNDTABLE DISCUSSION:

THE FRAGILITY OF ARMS CONTROL AT THE CURRENT CROSSROADS: TECHNICAL AND POLICY REMEDIES

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Arms control initiatives have been successful and powerfully effective in achieving their goals. The indefinite extension of the Nuclear Non-Proliferation Treaty (NPT) and the denuclearization of Kazakhstan and Ukraine are just the latest examples of arms control's strength and vitality. With all of this success, why talk of fragility? In this roundtable, two reasons emerged:

First, arms control today is messy compared to the rarefied arms control of the Cold War. Back in the "good old days," arms control was simple because it focused primarily on bilateral arrangements between the United States and the Soviet Union. Negotiations, when they occurred (which was relatively infrequently), took place between only two sides—East and West. Today, arms control negotiations take place constantly, include the majority of the global community, and involve a myriad of topics ranging from intercontinental ballistic missiles to land mines to eye-damaging lasers. Cold War old-timers are not used to the

diversity and pandemonium of the post-Cold War world. Arms control looks so confusing and appears fragile because arms control, in the words of one panelist, has become "balkanized with no central focus." With all of this untidiness, there is a feeling among the arms control community that anything can happen—free-wheeling Russian nuclear scientists could sell their knowledge to the highest bidder, non-state actors could strike at any major city with chemical/biological weapons, any country could pull itself out of the NPT on a whim (as North Korea did in 1993). All of this was possible ten years ago, but the Cold War provided a ready-made environment that rendered these scenarios, if not improbable, of little consequence compared to a U.S.-Soviet Armageddon. Today, the sheer enormity of the task combined with the post-Cold War disorder has quite naturally created a sense of uneasiness.

Secondly, the perception of fragility is exacerbated by the nature of arms control itself. Arms control is intimately tied to

geopolitical vicissitudes and is subject to shifts in the international system. This is what one panelist meant when he said that arms control is "the art of the achievable," because arms control is merely a reflection of the international system in which it exists. The Cold War highlighted bilateral arms control, while today's system highlights multilateral arms control, what one panelist referred to as the system with "no coherent framework." Some members of the arms control community appear jittery because they long for the order and control that disappeared with the old bipolar international system.

Successes

Early in this decade, the Soviet Union began to disintegrate rapidly, destroying bonds that had tied Soviet republics together for many decades. No one knew how the collapse of the Soviet system would unfold. Would it be peaceful? How many of the fifteen new independent states (NIS) of the former Soviet Union (FSU) would face turmoil, revolution, or terrorism? Who would reside over the FSU nuclear stockpile? Would any of their warheads or missiles fall into the hands of revolutionaries, terrorists, or black marketeers?

In light of great uncertainty, the U.S. government recognized the risks of inaction and moved quickly by making dramatic unilateral arms control proposals in late September 1991, pledging to dismantle all of its nuclear weapons. In early October 1991, President Gorbachev responded in kind, and in 1992 the Russian government reaffirmed Gorbachev's commitment to denuclearize. The Nunn-Lugar program created additional momentum and offered prospects for the FSU's ability to implement the Strategic Arms Reduction Treaty (START) and other arms control arrangements. The U.S. government initiated a plan to purchase 500

metric tons of highly enriched uranium from dismantled Soviet weapons in order to eliminate the possibility it would find its way onto the global black market.

There has been little mystery to U.S. involvement in arms control efforts in the NIS. The U.S. government saw the need for a new and cooperative relationship with FSU states based on the presence of nuclear, biological, and chemical (NBC) weapons and ballistic missiles in these cash-starved nations. Most of the former Soviet nuclear-weapons complex was in Russia, but bits and pieces were scattered throughout the republics, and four of the states (Russia, Ukraine, Kazakstan, and Belarus) were de facto nuclear-weapons states. This situation raised the specter of unbridled proliferation of NBC weapons at a time when the memory of Iraq's NBC and missile program was still fresh in the minds of U.S. policymakers. The discovery of Iraq's massive program was a wake-up call; never again would the United States be caught by surprise.

The collapse of the Soviet Union delegitimized or weakened current arrangements such as the NPT, International Atomic Energy Agency (IAEA), Coordinating Committee for Multilateral Export Control (COCOM), Australia Group, and Missile Technology Control Regime. The hemorrhaging of NBC weapons, their components, and their technologies to aggressive states and non-state actors was cause for great concern. Only Russia had the infrastructure in place for maintaining control over WMD, and the others in the FSU had to start from scratch. Even the Russian government was unaccustomed to new commercial ventures that were no longer under its control. Each state had to confront the prospects of black market influences and the lack of modern safeguards to prevent proliferation.

Fortunately, in the last four years there has emerged a new high-level focus on strengthening the NPT while adjusting to new global realities, with Russia as one of the principal participants. The IAEA began to develop "challenge inspections" in the wake of failures revealed after the war against Iraq. COCOM has been replaced with Wassenaar, disengaging from the containment strategy of the Cold War to controlling technology exports to potential proliferants around the globe. The NIS are the biggest challenge in the arms control field, but much has happened on the positive side.

Denuclearization in the non-Russian NIS is almost complete; nuclear material control, protection, and accounting programs are well under way in Russia; and the International Science Technology Center has subsidized over 11,000 FSU scientists who formerly worked on NBC weapons, to encourage them to stay in their countries rather than move to aspiring proliferant states. U.S. governmental and nongovernmental organization-sponsored export control training seminars have assisted Russia and the NIS in diminishing the likelihood of export leaks.

Post-Cold War Jitters

The perception of fragility among the arms control community stems mostly from the unfamiliar and precarious nature of the multipolar international system. Traditionally, arms control was built around long-term enduring agreements between two superpowers. With all that has changed, many of the treaties need to be adapted to today's environment. For example, the Treaty on Conventional Forces in Europe (CFE) did not envision the possibility that Poland would some day be a member of NATO, but that may come to pass. The Anti-Ballistic Missile (ABM) Treaty limits antiballistic missile technology, but this too might need to be

revamped if the perception of increased ballistic missile vulnerability (to "rogue" states) continues in the United States.

Arms control today is much more complicated than it was under the old system. "Ten years ago life was simple," said one panelist from the United States, "today it seems like we're all over the place with no central focus and no coherent framework." As noted in the discussion of Plenary I, some members of the U.S. arms control community want an arms control tsar who would bring the "chaos" under control. The merits of an arms control tsar can be debated, but, if nothing else, the call for one illustrates the desire to set the arms control house in order in today's murky global political environment.

The sense of precariousness is keenly felt by the U.S. arms control community which was, after all, so enmeshed in the old bipolar system. There is fear among some members of the community that now that the Cold War is over, and, in the American view, was won by the West, the American people might abandon arms control, forget its relevance, and refuse to spend the money for the kind of hedges that inspection, data collection, and stewardship arms control regimes require. Nothing could be more natural in a liberal republic, yet nothing could be more dangerous to the progress it has achieved. One panelist worried that the U.S. arms control community risked alienating itself from the American people by preoccupying itself with marginal and "counter-productive endeavors" such as the banning of landmines and eye-damaging lasers, which might in a time of need undermine U.S. security capabilities rather than enhance them. "We must stick with the basics of arms control which are for the purposes of improving U.S. national security," he said.

Another panelist agreed that the U.S. arms control community must integrate arms control into broader U.S. national security concerns to keep congressional and public support alive. This is a challenge because so many of today's key issues in arms control are multilateral. As a consequence, U.S. national security interests are not nearly as discernible to the American public as negotiations were with the Soviet Union in the Cold War. The Chemical Weapons Convention and the Comprehensive Test Ban Treaty, for example, are multilateral agreements. They are not new, but the high priority and degree of attention they are receiving is. If the American public rejects their importance, the U.S. arms control effort could lose its funding.

Aspects of U.S. nonproliferation policy contribute to the sense of vulnerability. Current efforts such as the Cooperative Threat Reduction (CTR) program constitute preventive defense. These types of programs have faced resistance on Capitol Hill and throughout the federal government because the implementation of such programs is difficult to discern, as nothing tangible emerges from them once they have been completed. In 1956, the U.S. government rejected comprehensive preventive air defense recommendations made by the Gaither Committee. At the time, the American public was unwilling to spend money on passive defense programs.

The attitude has been, and it holds true today, that the American public will not spend money on passive systems that do not win wars. Consequently, defense programs are almost exclusively product oriented (e.g., weapon systems, force structure, and military operations). The benefits of CTR, as a preventive defense, are perceived as ambiguous, particularly because it lacks a product. Not surprisingly, support of the CTR program from

Capitol Hill has been tepid. The lackluster endorsement of preventive nonproliferation programs, such as CTR, magnifies the feeling of fragility in the U.S. arms control community.

Arms Control as Reactive

The reactive nature of the arms control field adds to the perception of fragility. Conceptually, arms control can be understood as a tool, a strategy, a by-product of national security and international relations. As a result, arms control never leads or creates policy but, rather, is led by policy and is subservient to larger systemic forces. The recognition that arms control is a means of statecraft and not an end led one member of the audience to assert, "we only address the symptoms of the problem but not the cause." The theme of arms control as a subsidiary of larger geopolitical and policy variables was articulated by a panelist who said that "even if the Russia problem is totally solved we have to face the inherent fragility of any nonproliferation regime [because arms control] institutions and regimes always have to play catch-up with the times." Arms control only goes as far as the system will allow. When the system shifts, as it did in 1991 from bipolar to multipolar, arms control shifts too, and all the old treaty regimes must be re-adjusted to fit the new geopolitical realities (as mentioned earlier with regard to the CFE, START, and ABM Treaties).

Solutions?

The transcendent nature of the discussion did not lend itself easily to specific technical and policy remedies. (The one exception concerned the reworking of older agreements. On this topic one panelist commended the START Joint Compliance Inspection Committee and said such efforts must continue if these treaties are to survive into the next century.)

Mostly, panelists urged U.S. and international policymakers to maintain their commitment to arms control and to fulfill their treaty obligations.

There was particular concern about the question of long-term U.S. commitment stemming from its traditional ambivalence toward internationalism. Elaborating on this point, one panelist said that the American people have always been "twitchy" about internationalism, and this is reflected in the public mind-set and in the government—in the ways in which problems are put forward and in which options are debated and selected. Unilateral action has long been a core concept of American individualism. Since Woodrow Wilson's failures at Versailles in 1918, Americans have never completely lost their distaste for internationalism, especially when it is untidy, ambiguous, complicated, and not under their complete control. At such moments Americans struggle against the temptation to withdraw from international politics.

The best antidote against American defection from the international arena is to ensure that U.S. involvement in multinational efforts (such as many arms control negotiations, but also in peacekeeping initiatives such as in Bosnia) promotes U.S. national security interests. To do so requires a clear vision of U.S. national security interests. Panelists hoped that internal discourse and debates—which are alive and well—will continue to provide clarity and constant reevaluation to make dealing with the messiness of international politics more manageable.

Other Topics: U.S.-Russian Relations

At times during the roundtable, panelists delved into relatively less abstract topics, such as the direction of international security and how it would be impacted by a shift in U.S.-Russian relations. The

U.S. government should seriously consider whether it is worth the risk of weakening U.S.-Russian relations by pursuing a missile defense program which might violate the ABM Treaty. Ignoring Russian concerns in this area might bring out the "worst monsters" within the context of domestic Russian politics and jeopardize progress on START II. In addition, the U.S. government should recognize how the expansion of NATO might alter the strategic balance in Eurasia, especially if tactical nuclear weapons are deployed in new member countries.

Summary

The hand wringing in the arms control community, as evidenced during this roundtable, is largely over the fact that the global security environment has become unwieldy and unpredictable during the recent years of multipolarity. This is in contrast to the Cold War situation, in which the determinants of arms control success or failure were relatively limited in number and scope (although miscalculation in security matters could have apocalyptic results). Further complications today include the difficulties in simply defining the challenges and threats, and in balancing cost cutting with defense needs.

Despite the current frustrations and uncertainties—and perceived frailties—in arms control, the roundtable demonstrated convincingly what is often forgotten: that even with all of the treaty terms, monitoring technologies, and implementation methods, the process of controlling arms rests with people. The participants in this session and during the conference as a whole were a reminder, finally, that with the people there is seldom fragility, but, rather, a robust community devoted to controlling arms while preserving national and global security.

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ABBREVIATIONS AND ACRONYMS

ABM	Anti-Ballistic Missile
ACDA	Arms Control and Disarmament Agency
ARF	ASEAN Regional Forum
ASEAN	Association of Southeast Asian Nations
BMD	Ballistic Missile Defense
BTWC	Biological and Toxin Weapons Convention
BWC	Biological Weapons Convention
C ⁴ I	Command, Control, Communications, Computers, and Intelligence
CBM	Confidence-Building Measure
CD	Conference on Disarmament
CFE	Conventional Forces in Europe Treaty
CIA	Central Intelligence Agency
CinC	Commander-in-Chief
CIS	Commonwealth of Independent States
CNA	Center for Naval Analyses
COCOM	Coordinating Committee for Multilateral Export Controls
CRG	Compliance Review Group
CSBM	Confidence and Security Building Measure
CSCE	Conference on Security and Cooperation in Europe
CTBT	Comprehensive Test Ban Treaty
CTR	Cooperative Threat Reduction
CWC	Chemical Weapons Convention
DoD	Department of Defense
DOE	Department of Energy
DNA	Defense Nuclear Agency
DSWA	Defense Special Weapons Agency
EC	European Community
EU	European Union
FMCT	Fissile Material Cutoff Treaty
FSU	Former Soviet Union
IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
IDA	Institute for Defense Analyses
INF	Intermediate-Range Nuclear Forces Treaty
ISTC	International Science and Technology Center
JCS	Joint Chiefs of Staff
LTBT	Limited Test Ban Treaty

MIRV	Multiple Independently Targetable Reentry Vehicle
MLM	Military Liaison Mission
MRC	Major Regional Contingency
MTCR	Missile Technology Control Regime
NATO	North Atlantic Treaty Organization
NBC	Nuclear, Biological, and Chemical
NEACD	Northeast Asian Cooperation Dialogue
NGO	Non-Governmental Organization
NIS	New Independent States
NNWS	Non-Nuclear Weapon States
NPR	Nuclear Posture Review
NPT	Nuclear Non-Proliferation Treaty
NRRC	Nuclear Risk Reduction Center (Russian Federation)
NSG	Nuclear Suppliers Group
NTM	National Technical Means
NWFZ	Nuclear-Weapon-Free Zone
NWS	Nuclear Weapons State
OSCE	Organization for Security and Cooperation in Europe
OSD	Office of the Secretary of Defense
OSIA	On-Site Inspection Agency
OTA	Office of Technology Assessment
PLA	People's Liberation Army (China)
PNE	Peaceful Nuclear Explosion
R&D	Research and Development
REVCON	Review Conference
RVOSI	Reentry Vehicle On-Site Inspection
SAIC	Science Applications International Corporation
SALT	Strategic Arms Limitation Treaty
SAMS	Surface-to-Air Missiles
SDI	Strategic Defense Initiative
SLBM	Submarine-Launched Ballistic Missile
SNL	Sandia National Labs
START	Strategic Arms Reduction Treaty
TLE	Treaty Limited Equipment
TMD	Theater Missile Defense
TWG	Technical Working Group

UNSCOM	United Nations Special Commission (Iraq)
VCC	Verification Coordinating Committee (NATO)
VICS	Verification, Implementation and Coordination Staff (NATO)
WMD	Weapons of Mass Destruction